

BEADS FROM AHICHCHHATRĀ, U.P.

By MORESHWAR G. DIKSHIT

The value of beads as a dating factor has not yet been extensively tested in the historical archaeology of India, a chief reason being the limited amount of stratified material and the absence of well-documented reports thereon. In recent years, however, attention has been directed to this field of investigation, and the researches of Dr. M. G. Dikshit, Lecturer in Archaeology, University of Saugor, who has systematically studied the bead-material from many excavated sites and in museums, deserve mention in this connexion. In the present article he deals with the beads found in the 1940-44 excavations at Ahichchhatrā, the pottery and terracotta figurines of which have been published in the previous numbers of this journal.

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1. INTRODUCTION

THE Archaeological Survey of India conducted extensive excavations at Ahichchhatrā, District Bareilly, U.P., and the readers of *Ancient India* are already familiar with the principal pottery-types¹ and terracotta figurines² unearthed there. In 1951 the beads from the site were sent to me for study and report by Shri A. Ghosh, to whom my thanks are due.

The method of recording followed at Ahichchhatrā and the chronology of the site have already been dealt with in the two previous articles. As in the case of terracottas, the bead-material from the plot called AC III, which yielded the most representative strata representing the different periods in the history of the site, has been taken here as the basis for study, the beads from other plots and from the surface being utilized for comparative typological analysis.

The chronology of the site may be repeated here :

- Stratum IX : before 300 B.C.
- Stratum VIII : 300 to 200 B.C.
- Stratum VII : 200 to 100 B.C.
- Strata VI and V : 100 B.C. to A.D. 100.
- Stratum IV : A.D. 100 to 350.
- Stratum III : A.D. 350 to 750.
- Stratum II : A.D. 750 to 850.
- Stratum I : A.D. 850 to 1100.

2. ETCHED BEADS

Amongst the distinctive types of beads, the etched variety naturally deserves special attention. These beads, having decorative patterns etched on their surfaces by a chemical process, were known in India from a very remote antiquity, the earliest specimens being those from the Harappan sites. The nature and the distribution of these beads in India have been exhaustively dealt with in my monograph on etched beads in India.³ At Ahichchhatrā, as many as ten beads of carnelian and agate were recovered from the excavations, and there are three more in a string of sixtyseven beads collected from the surface. With the exception of one bead, no. 10, which belongs to Type II, all are of Type I, in which the patterns are etched in white directly on the surface of the stone. Most of the patterns by themselves do not show any new variety, having been included in the monograph referred to above. The majority of the specimens was recovered from areas other than AC III and therefore cannot be very accurately dated. The following list shows their distribution and the antiquity of certain patterns illustrated by them is discussed below.

TYPE I, NOS. 1-9 (fig. 1 ; pl. X)

Carnelian

1. Short cylinder circular with zonal bands.
No. 4075. AC III, KIX/E5g, -38 ft. Stratum I.

¹ A. Ghosh and K. C. Panigrahi, 'The pottery of Ahichchhatra', *Ancient India*, no. 1 (1946), pp. 37 ff.

² V. S. Agrawala, 'Terracotta figurines of Ahichchhatrā, *ibid.*, no. 4 (1947-48), pp. 104 ff.

³ M. G. Dikshit, *Etched Beads in India*, Deccan College Monograph Series, no. 4 (Poona, 1949).

2. Convex barrel circular. Zonal bands and three eyes formed by circles.
No. 1411. AC III, KX/F2b, -34 ft. Stratum I.
3. Long barrel circular, decorated with eyes in compartments. Variant of pattern 6b in
Etched Beads, pl. V.
No. 3164. AC V, QVIII/P4h, -63 ft.
4. Long barrel circular, decorated with convex lines and rows of four short strokes
between each. New pattern.
No. 3059. AC V, QVIII/O9j, -50½ ft.

Agate

5. Spherical, decorated with pattern 6a.
No. 8902. AC III, KIX/K10k, -60 ft. Stratum VIII.
6. Spherical, decorated with pattern 6a.
No. 8524. AC III, KIX/P5c, -49 ft. Stratum IVb.
7. Spherical, decorated with pattern 6a.
No. 6554. AC IV, MIX/N4k, -43 ft.
8. Long barrel circular, decorated with pattern 14.
No. 6554. AC V, QVIII/P5r, -73 ft.
9. Spherical, decorated with zigzag lines between zonal bands.
Surface.

TYPE II, NO. 10 (fig. 1 ; pl. X)

Carnelian

10. Long barrel circular, having diamonds with zonal bands. New pattern similar to
pattern 20.
No. 3066. AC V, QVIII/P10j, -60 ft.

A few of the patterns decorating these beads are interesting. The carnelian bead no. 4, with horizontally laid convex lines and having four strokes in each compartment, is unfortunately not very accurately dated but is believed to be very early. This pattern occurs amongst the beads from Kausāmbī,¹ where it is dated about 200 B.C.

No. 5 above (spherical bead with pentagons, pattern 6a) indicates that the antiquity of this pattern can be carried back to about 300 B.C. The pattern, which is noticed for the first time at Taxila, had a very wide distribution in the Gangetic valley but seems to have reached the south only in the early centuries of the Christian era, as can be inferred from the stratified beads from the excavations at Nāsik, Tripurī, Bahal and Konḍāpur. In the present state of our knowledge it seems likely that it might have found its way into the Deccan with the advent of the Śātavāhanas.

Pattern 14, which is noticed on no. 8, is a variation of pattern 6a, the difference being only in the shape, which is long barrel circular. This pattern shares the same chronological features as pattern 6a, though a slightly higher antiquity (400 B.C.) is claimed by the excavated beads from Kausāmbī. The barrel shape is more recurrent than the spherical.

¹ Information from Shri G. R. Sharma.

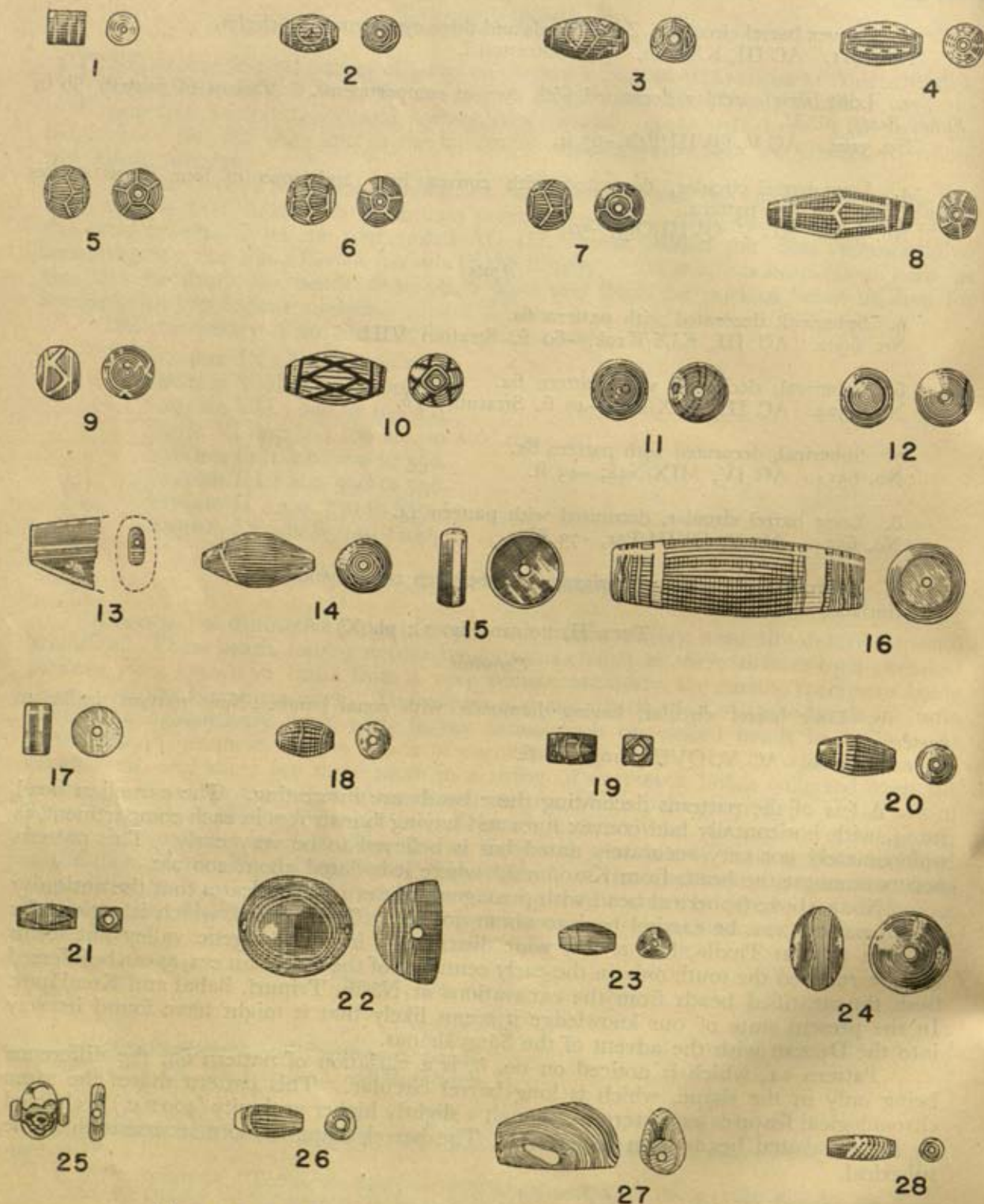


FIG. 1. 1-4 and 10, etched carnelian ; 5-9, etched agate ; 11-28, agate. $\frac{1}{2}$

A somewhat rare pattern is revealed by bead no. 3, which is decorated with three small eyes, probably intended as protection against the 'evil eye'. The decoration is very truthful; the corners of the eyes are indicated and the central dot represents the corona. I have seen similar beads from Kauśāmbī in the B. M. Vyas collection at Allahabad, but in these the 'eyes' assume the shape of elongated circles occasionally without the central dot. An identical bead, also from Kauśāmbī, is in the author's collection.

3. BEADS OF AGATE

Amongst the stone beads, agate and carnelian ones constitute the largest number, there being eighty-eight beads of agate and sixty-three of carnelian. A large majority of the former is banded and shows a very careful selection of the material. The following shapes are represented: spherical, 19; long barrel circular, 16; short barrel circular, 4; long barrel triangular, 1; short cylinder circular, 1; convex barrel lenticular with lug-collars, 1; rectangular cornerless square, 27; trapezoid or tapering lenticular, 1; plano-convex elliptical, 1; and leech-shaped lenticular, 1.

The spherical beads are distributed over all the strata, with their dates ranging from 300 B.C. to A.D. 1100, but only a few amongst them are remarkable for the excellent polish they bear. No. 11 is an eye-bead having a number of stratified eyes in the natural stone and is very carefully polished. It is datable to about 300-200 B.C. No. 12, of the same period, is remarkable for its elegant polish.

The long barrel circular beads are mostly confined to Strata IV and III, though quite a large number are either unstratified or surface-finds. An unusually large bead, no. 16, though not very remarkable for its workmanship, is paralleled by similar beads from Kauśāmbī, Taxila and Valabhī.¹ It is dated about A.D. 350. Nos. 20 and 26 have been selected on account of their very high polish showing excellent workmanship of the lapidaries at Ahichchhatrā, though their dates are not very clearly defined.

Short barrel circular is the shape of four beads, two of which, nos. 15 and 24, are illustrated here. In shaping these, the flattened surfaces have been so cut as to leave the natural bands in the centre. All these are perforated by a single operation from end to end and thus indicate that the drill used for them was sufficiently long; in the case of all other beads the usual practice was to drill them from opposite ends and to allow the bores to meet. These, if not properly worked, result in the perforation having an obtuse angle or even a V-shape. The ancient practice of boring in this manner is continued by the lapidaries even now in the modern bead-industry at Cambay; and in spite of the better equipment they prefer to drill the bead by the double-perforation method for fear of breaking the bead at one of the lateral ends. A short cylinder bead, no. 17, shows a small fracture near the hole resulting out of the pressure exerted by the drill.

Amongst the faceted forms only a few beads are noteworthy. A long barrel triangular bead, no. 23, is not very accurately dated, but from its worn-out condition it appears to have been an old specimen. The antiquity of this shape is established by carnelian and agate beads at Taxila² datable to about the first century A.D. At Kauśāmbī a similar carnelian bead was found in a stratum attributed to the same century. At Tripurī identical beads occur in the second century levels. At Bahal³ two beads of this shape are dated about the first century, which is also the date of two carnelian beads from Nāsik. Agate beads from

¹ Author's collection.

² H. C. Beck, *Beads from Taxila*, Mem. Arch. Surv. Ind., no. 65 (Delhi, 1941), pl. I, 1, 18 etc.

³ Information from Shri M. N. Deshpande (for this and subsequent references to Bahal).

Konḍāpur¹ are of the Śātavāhana period, while the megalithic burials at Raigir² contained six specimens in quartz and one of jasper. Surface-collections made at Arikamedu³ show that the type also existed there, though accurate dating is not possible. The barrel triangular bead seems, therefore, to have had a very wide distribution round about the early centuries of the Christian era both in north and south India.

Outside India, beads of this shape occur amongst some of the oldest civilizations of the Ancient World, extant specimens being known from the Tasian Culture in Egypt (limestone),⁴ at Ur and Kish in Iraq (quartz) and in Crete (amethyst).

A very interesting panel bead, no. 13, from Stratum VI has the shape of a trapezium and is lenticular in section. The natural bands in the stone run transversely on the flat sides. It is partly broken but must have been very beautiful when complete. I have not seen any bead of this shape.

Twentyseven beads are rectangular in shape with a square section. These have their corners chamfered in such a way as leave a diamond-shaped panel on the elongated faces. These beads, all banded, come from a very late stratum (Stratum I). This shape is very common amongst the trade-beads used to the present day and can be purchased in quantities in the market. Before the last War Germany used to export identical beads made of a synthetic material exactly resembling banded agate. The specific gravity of these, however, was much lower than real agate. The specimens from Ahichchhatrā are no doubt of genuine banded agate, but their late date precludes the possibility of using them as guide-types. The first of the two beads in the collection, nos. 19 and 21, is from Stratum I, and the second from Stratum II.

Another interesting bead, no. 22, is a plano-convex bead having the appearance of a seal-stamp. It has an oval base and a natural 'eye' of two rings in the rounded portion at the top. Beads of this shape are known to me from the surface-collections at Kauśāmbī⁵ and Rājghāt.⁶ The specimen from Ahichchhatrā belongs to Stratum II.

The unstratified collection includes a tiny barrel lenticular bead with lug-collars (no. 25). The importance of this shape and its value for the purpose of dating has already been dealt with elsewhere.⁷ The present bead is of veined agate and is very well made.

The collection also includes a very fine leech-shaped bead (no. 27), which, though not accurately dated, appears to be a very early specimen. One of its ends is unfortunately broken, but the bands interchanging between black and white produce a very artistic effect.

Leech-shaped beads have a very remote antiquity in India. The earliest specimen is a single agate bead from Harappā.⁸ At Taxila⁹ these occur in the Mauryan strata in Bhīr Mound, and a few from Sirkap evidently show the continuance of the shape till the early centuries of the Christian era. These are fairly well-distributed in the Gangetic

¹ M. G. Dikshit, *Some Beads from Kondapur*, Hyderabad Arch. Series, no. 16 (Hyderabad, 1952), pl. I, 3.

² *Man*, special India number, XXX, no. 10 (October 1930).

³ Beads in the Bibliothèque at Pondicherry (for this and subsequent references to Arikamedu, unless otherwise specified).

⁴ Brunton, *Mostagedda and the Tasian Culture* (London, 1937), pls. XIII, 18; XXII, 27.

⁵ Beads in the Allahabad Municipal Museum (for this and subsequent references to Kauśāmbī unless otherwise specified).

⁶ Beads in the Bhārat Kalā Bhavan, Banaras (for this and subsequent references to Rājghāt).

⁷ *Ancient India*, no. 2 (1946), p. 97; H. D. Sankalia and M. G. Dikshit, *Excavations at Brahmapuri (Kolhapur)* 1945-46 (Poona, 1952), pp. 102, 144 etc.

⁸ M. S. Vats, *Excavations at Harappā*, II (Delhi, 1940), pl. CXXXIX, 1.

⁹ Beck, *op. cit.*, pl. III, 1-6 and 37; IV, 8, 9 and 35.

valley, several specimens being known from Rājghāt, Masaon Dīh,¹ Madhuri,² Ghosi³ and from the excavations at Kauśāmbī. At Vaiśālī⁴ they occur exclusively in the Mauryan stratum, and probably this is also the date of several exquisite specimens preserved in the Patna Museum, found during the sewage operations. In south Bihar eight carnelian beads and a single one of agate were recovered by Col. D. H. Gordon from a site called Haribārā on the banks of the Karkai river.⁵ None, however, seems to have been reported from south India.

Outside India, leech-shaped beads are known from Babylon,⁶ Ur and Kish in Iraq,⁷ at Hissar in Damghan⁸ and amongst the XIIth Dynasty beads in Egypt.⁹

From the antiquity of the shape as known from the Harappan example, Marshall thinks that they may be of Indian origin or the technique may have been evolved at different centres from a common source.¹⁰

This specimen, together with another specimen in carnelian, no. 42, is unfortunately not clearly stratified.

Nos. 11-28 (fig. 1 ; pl. X)

11. Spherical eye-bead.
No. 9000. AC III, KIX/P10d, -60½ ft. Stratum VIII.

12. Spherical eye-bead.
No. 8999. AC III, KX/L1d, -60½ ft. Stratum VIII.

13. Tapering lenticular.
No. 8808. AC III, KX/L2d, -58 ft. Stratum VI.

14. Long barrel circular.
No. 8746. AC III, KX/L2c, -52 ft. Stratum V.

15. Short barrel circular.
No. 8763. AC III, KX/L1c, -50 ft. Stratum IVc.

16. Long barrel circular.
No. 8534. AC III, KX/F1j, -47½ ft. Stratum IIIId.

17. Short cylinder circular.
No. 6436. AC III, KX/F2h, -45 ft. Stratum IIIb.

18. Long barrel circular.
No. 4214. AC III, KIX/K5c, -41 ft. Stratum I.

¹ Author's collection (for this and subsequent references to Masaon Dīh).

² Author's collection (for this and subsequent references to Madhuri).

³ Beads in the collection of Shri Shri Nath Saha, Banaras (for this and subsequent references to Ghosi).

⁴ Information from Shri Krishna Deva (for this and subsequent references to Vaiśālī).

⁵ Notes on the Gordon collection, kindly supplied by Col. D. H. Gordon.

⁶ R. Koldeway, *Excavations at Babylon* (translated, 1914), p. 263, fig. 185.

⁷ C. L. Wooley, *Ur, the Royal Cemetery* (Oxford, 1934) p. 372, fig. 79 ; pl. 132, U12474.

⁸ E. Schmidt, *Excavations at Tepe Hissar, Damghan* (Philadelphia, 1937), pls. XXXV ; LXVI,

H. 321.

⁹ Cf. Dorothy Mackay in *Antiquity*, no. 72 (Dec. 1944), p. 204.

¹⁰ J. Marshall, *Taxila, II* (Cambridge, 1952), p. 744.

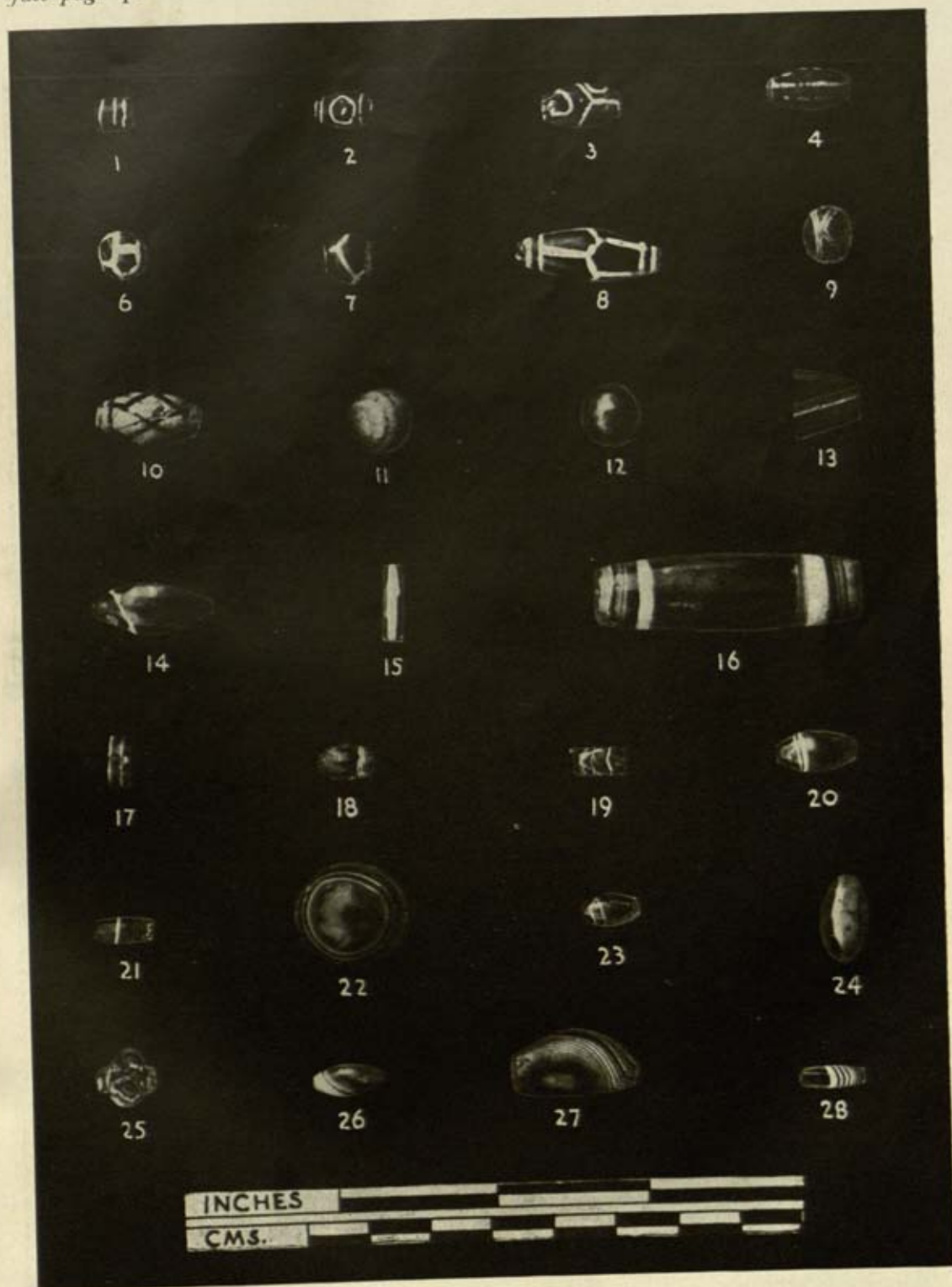
19. Rectangular cornerless.
No. 1173. AC III, KX/F2g, -41 ft. Stratum I.
20. Long barrel circular.
No. 3833. AC III, KIX/C10g, -41 ft. Stratum I.
21. Rectangular cornerless.
No. 4122. AC III, KIX/E8f, -40 ft. Stratum II.
22. Circular plano-convex.
No. 4045. AC III, KX/A2c, -39 ft. Stratum II.
23. Long barrel roughly triangular.
No. 4098. AC III, KIX/E6f, -38 ft. Stratum I.
24. Short barrel circular.
No. 340. AC III, KX/B8g, -33 ft. Stratum I.
25. Standard barrel lug-collared tabular.
No. 3111. AC V, QVIII/P3j, -50 ft.
26. Long barrel circular.
No. 9314. AC VII, HV/C6f, -42 ft.
27. Leech-shaped oval.
No. 11407. AC XV, RVII/T10h, -60½ ft. (Pit).
28. Long barrel circular.
No. 11309. AC XV, RVII/T9j, -52 ft.

4. BEADS OF CARNELIAN

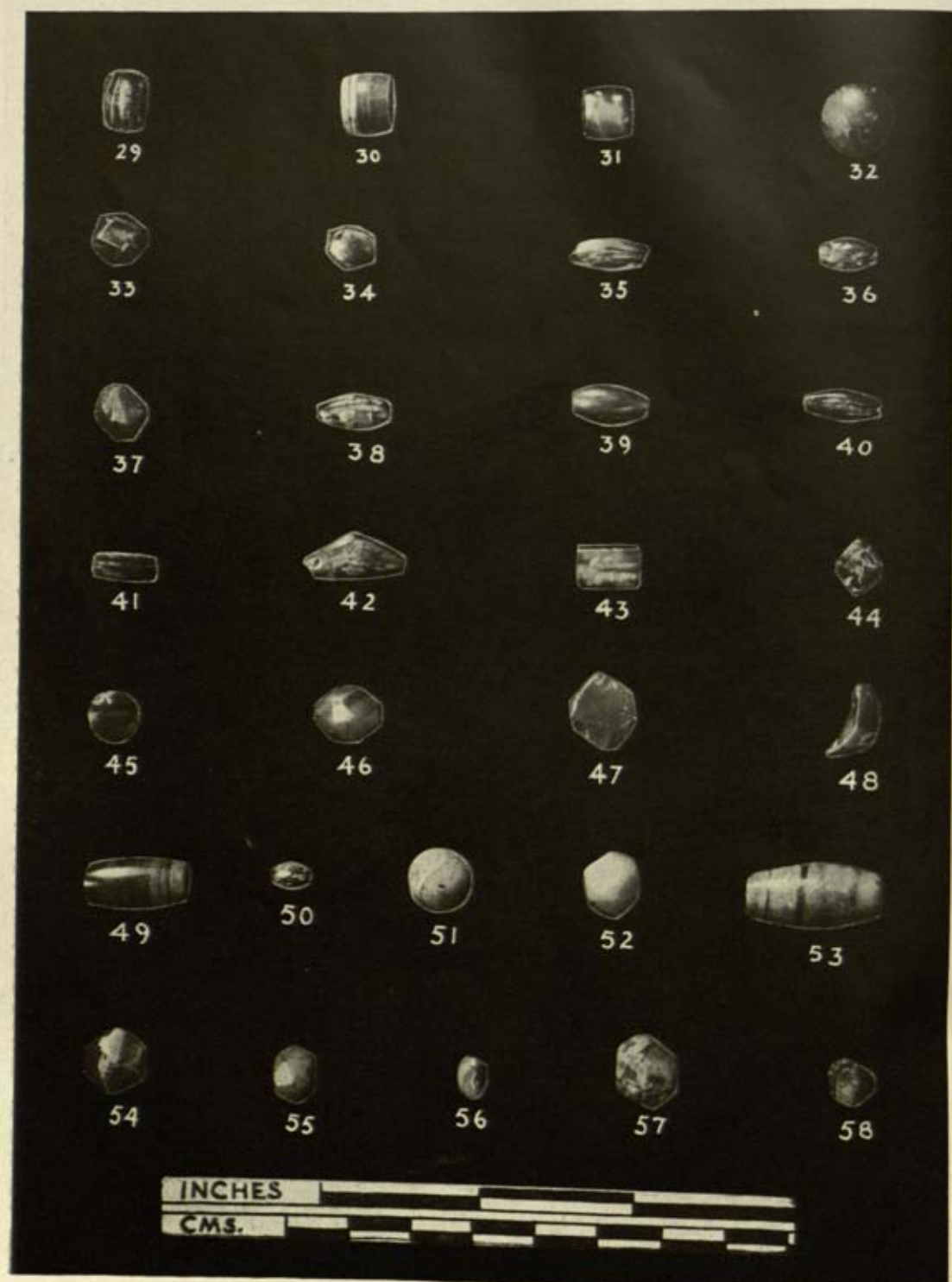
The total number of carnelian beads excavated at Ahichchhatrā is sixtythree. The most popular shapes are the spherical and long barrel circular, of which there are twentytwo and twelve specimens respectively. The stratified spherical beads occur between Strata IV and I, i.e. about A.D. 100 and 1100. There is a striking predilection for short barrel circular beads in Stratum VIII, while the long barrel circular ones are confined to Stratum I only. Besides these the following shapes are represented: multi-faceted bicone twisted pentagonal, 4; barrel-shaped hexagonal, 3; truncated bicone hexagonal, 2; long barrel square, 2; standard barrel triangular, 1; circular tabular, 1; hexagonal tabular, 1; diamond tabular, 1; rectangular hexagonal flattened, 1; leech-shaped lenticular, 1; and dagger-shaped pendant, 1.

The multi-faceted twisted pentagonal bead is a very common shape on several sites in India, but I have rarely seen this shape represented by any material other than chalcedonic quartz and faience. It is a particularly common shape for green jasper beads. At Ahichchhatrā the date of the four beads ranges between Strata IV and I. Many beads from Kauśāmbī, Rājghāt and Ghosi are unstratified. At Taxila the period for these beads ranges between the first century B.C. and the first century A.D. At Tripurī these occur in Stratum IV (A.D. 100-200). At Nāsik, Bahal and Kolhāpur¹ they are found in the Śātavāhana stratum.

¹ Sankalia and Dikshit, *op. cit.*, p. 95, figs. 30, 3 and 31, 9.



Beads from Ahichchhatra: 1-4 and 10, etched carnelian; 6-9, etched agate; 11-28, agate (5, etched agate, not illustrated)



29-50, carnelian; 51-58, chalcedony

The long barrels and truncated bicones, both with hexagonal sections, nos. 36, 38, 35 and 40, are shapes of such common occurrence and are distributed over such a wide span of time that by themselves they have little dating value. The present specimens are from Strata I and II and are therefore comparatively recent.

A long barrel-shaped bead square in section, no. 41, is a somewhat rare form. This bead is very well made but was found near the surface. Carnelian beads of this shape are very frequent in Mandla District, Madhya Pradesh, a large number from Hirdaynagar being preserved in the Central Museum, Nagpur.

A small barrel-shaped bead triangular in section, no. 50, is a very interesting specimen. Though not accurately stratified, the bead-form has a dating value, as already discussed (above, p. 38).

A circular tabular bead, no. 45, presents another common shape and appears to be a very old specimen. At Taxila¹ the earliest bead of this shape and material is dated to the first century B.C. Identical beads are quite common among the Śātavāhana sites in the Deccan and the megalithic burials in south India.

A hexagonal tabular bead, no. 47, has a rare shape but is unstratified. Identical beads are known to me from Kauśāmbī, Rājghāt and Arikameḍu, but these are similarly unstratified. Diamond-shaped tabular beads, e.g. no. 44, are similarly scarce.

The rectangular hexagonal bead, no. 43, is a rare specimen. The probable date of this bead, which emanates from Stratum IX, is earlier than 300 B.C. Beck has commented upon the prevalence of flattened shapes of beads in ancient India.²

Leech-shaped beads of carnelian, e.g. no. 42, are very scarce and the antiquity of this type has already been discussed (above, p. 39).

Of special interest is a small well-made pendant, no. 48, shaped in the form of a dagger. The shape has a remote antiquity in India. At Taxila³ two dagger-shaped pendants, of carnelian and agate, both of them datable to the third century B.C., were found. In the excavation at Vaiśālī several pendants of this shape were found in the Mauryan stratum. Two similar pendants, one of ivory and the other of crystal, both from Kauśāmbī, are preserved in the Vyas Collection in the Allahabad Municipal Museum. In the south these are somewhat rare, two (one lapis lazuli and another faience) being known from Kondāpur.⁴ At Nāsik a dagger-shaped pendant of glass, having a lion's head at the top, was found associated with the Śātavāhana stratum. A small crystal dagger pendant from Arikameḍu is preserved in the Madras Museum, and there are a few from Maski as well.⁵ In the modern bead industry at Cambay dagger-shaped pendants of carnelian are frequently made for export to Assam. These pendants are described by them as 'tiger-claws' from the curved shape. It is often very difficult to distinguish between the various forms; but the decoration of necks by tiger-claws had a long history in India, as Bāṇa (seventh century) mentions them in his *Harsha-charita*⁶ and *Kādambarī*.⁷

Nos. 29-50 (fig. 2 ; pl. XI)

29. Short barrel circular.
No. 10877. AC III, KIX/Pgb, -62 ft. Stratum VIII.

30. Short barrel circular.
No. 8889. AC III, KIX/Pga, -61 ft. Stratum VIII.

¹ Beck, *op. cit.*, pl. IV, 38.

² *Ibid.*, p. 8.

³ *Ibid.*, p. 31.

⁴ Dikshit, *Some Beads from Kondapur*, pl. II, 103 and 104.

⁵ *An. Rep. Arch. Deptt. H. E. H. Nizam's Dominions*, 1935-36 (Calcutta, 1938), pl. VI B.

⁶ *Harsha-charita*, Nirṇayasāgara Press ed. (Bombay, 1912), p. 134.

⁷ *Kādambarī*, ed. M. R. Kale (Bombay, 1896), p. 54.

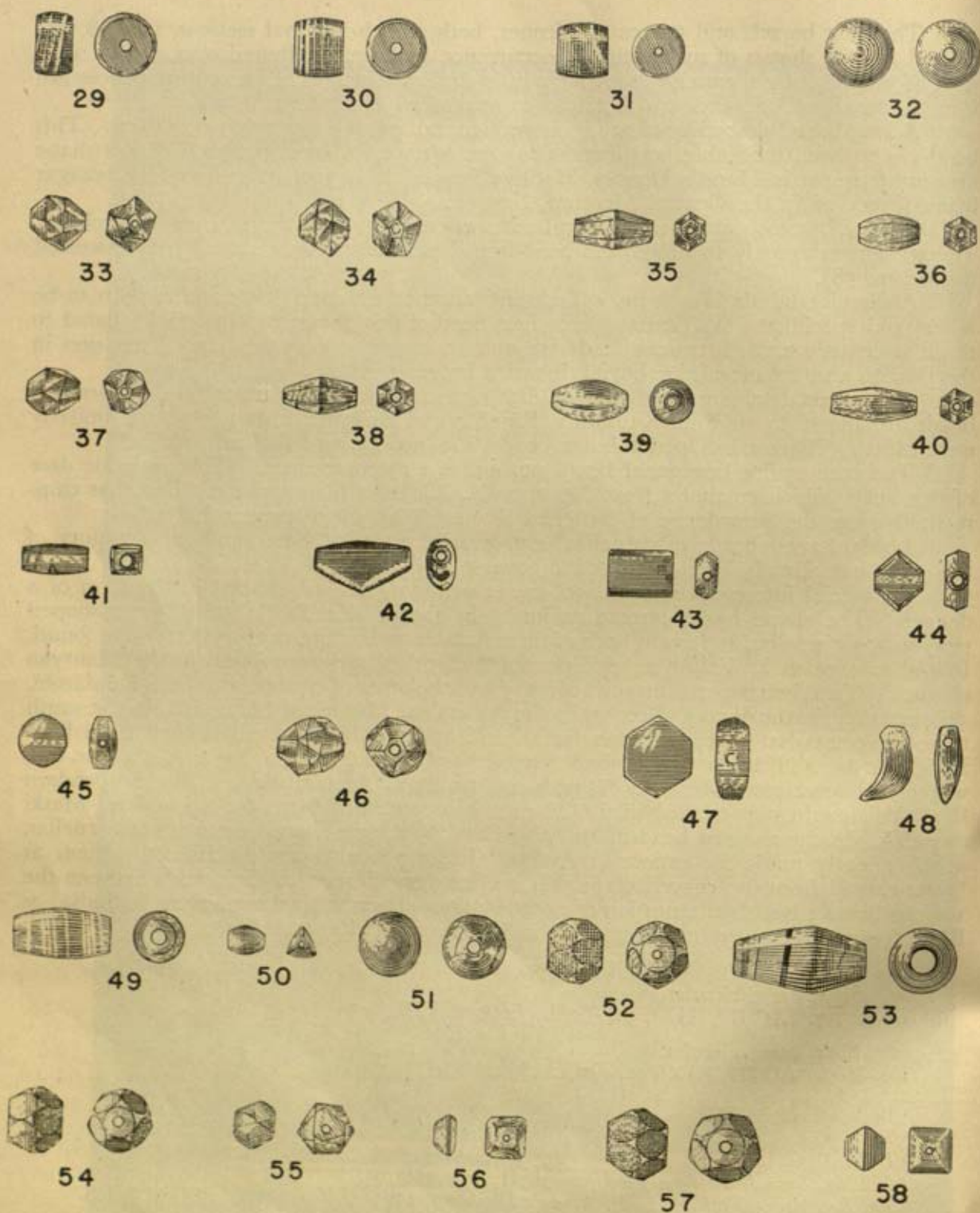


FIG. 2. 29-50, carnelian; 51-58, chalcedony. $\frac{1}{2}$

BEADS FROM AHICHCHHATRĀ, U.P.

31. Short barrel circular.
No. 8937. AC III, KIX/P9a, $-60\frac{1}{2}$ ft. Stratum VIII.
32. Spherical.
No. 8935. AC III, KIX/K9k, -59 ft. Stratum VIII.
33. Faceted biconical, twisted pentagonal.
No. 8662. AC III, KIX/K9k, -51 ft. Stratum VI.
34. Faceted biconical, twisted pentagonal.
No. 3832. AC III, KIX/C8g, -42 ft.
35. Long truncated bicone hexagonal.
No. 4211. AC III, KIX/K8d, -41 ft. Stratum I.
36. Long barrel hexagonal.
No. 1353. AC III, KX/F7b, -40 ft. Stratum I.
37. Faceted bicone twisted pentagonal.
No. 1267. AC III, KX/A9a, -39 ft. Stratum I.
38. Long barrel hexagonal.
No. 1293. AC III, KX/A7k, -39 ft. Stratum I.
39. Long barrel circular.
No. 1144. AC III, KX/F6d, -36 ft. Stratum I.
40. Long truncated bicone hexagonal.
No. 1238. AC III, KX/A9b, -36 ft. Stratum I.
41. Long barrel square.
No. 291. AC III, KX/M1g, -33 ft. Stratum I.
42. Long leech-shaped lenticular.
Surface.
43. Standard rectangular hexagonal flattened.
No. 6555. AC V, QVIII/P5b, -73 ft.
44. Standard diamond tabular.
No. 3097. AC V, -62 ft.
45. Circular tabular.
No. 6645. AC V, QVIII/P3j, -60 ft.
46. Faceted bicone twisted pentagonal.
No. 6529. AC V, QVIII/N10c, $-42\frac{1}{2}$ ft.
47. Hexagonal tabular.
No. 554. AC I, Trench 3, -55 ft. 8 in.
48. Dagger pendant.
No. 9223. AC VII, HV/C9h.
49. Long barrel circular.
No. 974. AC IV, MIX/N2f, $-45\frac{1}{2}$ ft.
50. Standard barrel triangular.
No. 11308. AC XV, RVII/Y9d, -52 ft.

5. BEADS OF CHALCEDONY

Out of the thirteen beads of chalcedony only a few are interesting. Six beads are spherical in shape, the oldest, no. 51, belonging to Stratum VIII. A long barrel circular bead, no. 53, is from Stratum IIIa. Three beads, nos. 52, 54 and 57, represent a variety in which the bicone truncated beads, having a pentagonal section, are faceted in such a way as to have large circular flats on each facet. Two of them are to be dated between 100 B.C. and A.D. 600, while the third one is unstratified. Beads of this variety are first met with at Taxila,¹ where they are to be dated to the fourth-third century B.C., and the flats are found to have a contrasty material like carnelian cemented on them in small plano-convex blocks. In the Indian Museum, Calcutta, there is a long bicone chalcedony bead of this variety with carnelian 'eyes', also from Taxila (no. I.M. 10052). Similar beads are found at Patna (nos. Sbk 35, 396 and Sk 35, 74 in the Patna Museum), which are believed to be of Mauryan date. It is very rarely that the cemented portion remains adhering to the body and only the 'bases' of these beads with rounded flats are found in excavations. Such beads have been found in the second century B.C. levels at Kauśāmbī.² They also occur in the Śātavāhana stratum at Nāsik, as also at Konḍāpur.³ From the Ahichchhatrā specimens the practice of using these beads seems to have continued at least till A.D. 600. Another interesting specimen, no. 55, is a truncated bicone bead, hexagonal in section, and is of a more recent date (A.D. 850-1100). Beads of identical shape but earlier in date have been found in the Gangetic valley. One cylinder disc bead with convex ends and square in section, no. 56, is an interesting specimen having parallels elsewhere but is unfortunately not stratified. Similar is the case with a truncated bicone square bead, no. 58, which is a surface-find.

Nos. 51-58 (fig. 2 ; pl. XI)

51. Spherical.

No. 8998. AC III, KX/L1d, -60½ ft. Stratum VIII.

52. Standard truncated bicone pentagonal with ground flats.

No. 8766. AC III, KIX/P10c, -56 ft. Stratum VI.

53. Long barrel circular.

No. 6367. AC III, KIX/K6b, -43 ft. Stratum IIIa.

54. Truncated bicone pentagonal.

No. 1392. AC III, KX/F5a, -42 ft. Stratum IIIb.

55. Truncated bicone hexagonal.

No. 1226. AC III, KX/F7b, -40 ft. Stratum I.

56. Cylindrical disc with convex ends, square.

No. 111. AC III, KX/G5a, -38 ft. Stratum I.

57. Truncated bicone pentagonal.

No. 3540. AC III, KX/B5h, -35 ft. Stratum I.

58. Truncated bicone square.

Surface.

¹ Beck, *op. cit.*, p. 6, pl. II, 34 and 35.

² Beads from Kauśāmbī excavation.

³ Dikshit, *Some Beads from Kondapur*, pl. II, 103 and 104.

6. BEADS OF CRYSTAL

Sixteen crystal beads were found in the excavation, and there are several specimens in the long string of surface-collections. The crystal is generally free from internal fractures and only the most transparent material is used for the beads. The following shapes occur : spherical, 5 ; long barrel circular, 2 ; long cylinder hexagonal, 1 ; long cylinder hexagonal with flattened sides, 1 ; bicone hexagonal, 2 ; lenticular hexagonal, 1 ; faceted bicone hexagonal, 2 ; barrel triangular, 1 ; and long barrel hexagonal, 1.

Among the five spherical beads only one, no. 65, is of special interest. It is not clearly stratified, being found near the surface, but appears to have been a very old specimen. It has a rough pitted surface and has all over the body traces of a green glaze, minute quantities of which are still left in the crevices. Spot-test at the National Chemical Laboratory, Poona, indicates that the bead was fire-polished by putting the glaze on the stone and no attempt was made to use any base like soda or lime to fuse it.

Glazing of stones was practised in the Ancient World, and very early specimens are known from Egypt, Iraq, Syria and India. Beck has already drawn attention to the various processes employed in the glazing of stones and has traced their antiquity from Pre-Dynastic times (S.D. 48) to the XIIth Dynasty in Egypt, 2300 B.C. to 900 B.C. in Iraq and upto the Roman period in Syria.¹ The only known Indian specimens are from Taxila,² emanating from Sirkap and the Dharmarājikā Stūpa, and are dated about the first century A.D. The present specimen from Ahichchhatrā, therefore, is an addition to our knowledge.

The shapes of the other crystal beads are more or less uninteresting, being of common occurrence. A long barrel triangular bead, no. 59, is dated 100 B.C.-A.D. 100. A small lenticular hexagonal bead, no. 60, is attributed to Stratum IVc. Beads of this shape are frequent at Rājgir³ and Lauriyā Nandangarh,⁴ at the latter place ascribed to the Śuṅga period.

To the Gupta period are attributed three beads of rare beauty. A short cylinder hexagonal bead, no. 61, is an unusually large specimen ; its sides are flattened to lie flat on the neck and its tapering ends are bottom-heavy. Another long cylinder bead with flattened hexagonal sides, no. 62, is a common shape ; while a third one, no. 63, a bicone hexagonal faceted bead, has irregular facets.

Two long barrel circular beads, nos. 64 and 66, are chosen here for the purity of their material, free from any flaws, the first attributed to Stratum I and the latter unstratified. Two bicone hexagonal beads, nos. 67 and 68, are from Stratum I and are examples of good workmanship. A standard barrel hexagonal bead, no. 69, a surface-find, is similarly well-worked.

A majority of the crystal beads from Ahichchhatrā shows a striking preference to hexagonal forms, which is probably due to the natural shape of the crystals which requires less cutting and polishing.

Nos. 59-69 (fig. 3 ; pl. XII)

59. Long barrel triangular.
No. 8846. AC III, KX/L1d, -58 ft. Stratum VI.

¹ Beck, 'Notes on glazed stones', *Ancient Egypt and East*, June 1935.

² Beck, *Beads from Taxila*, pl. V, 1-7.

³ Beads in the Indian Museum, Calcutta.

⁴ *An. Rep. Arch. Surv. Ind.*, 1935-36 (Delhi, 1938), p. 65 ; pl. XXIII.

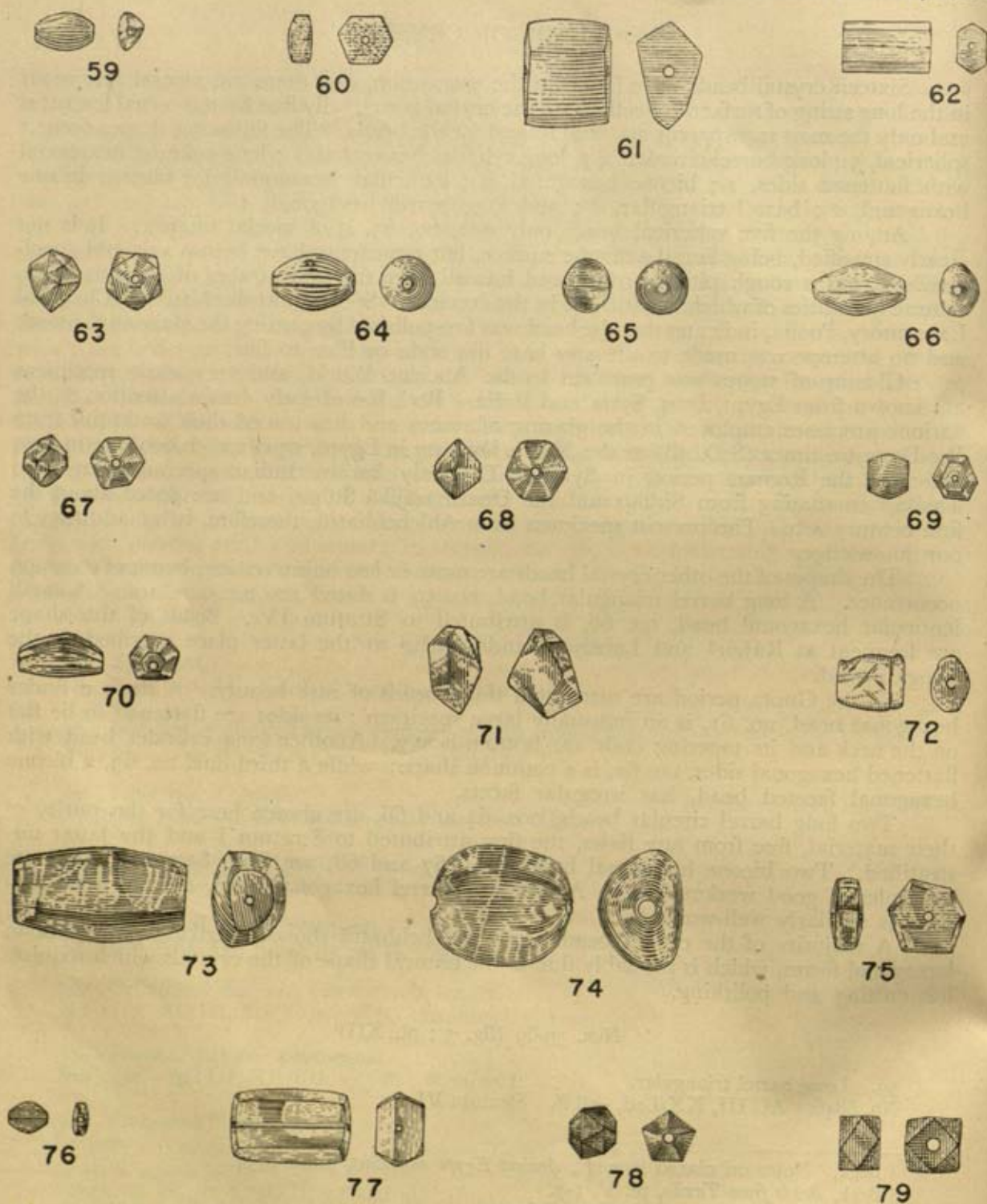


FIG. 3. 59-69, crystal; 70 and 71, yellow quartz; 72, milky quartz; 73-76, amethyst; 77, aquamarine; 78 and 79, green jasper. $\frac{1}{2}$

60. Lenticular hexagonal.
No. 8361. AC III, KIX/P96, -51 ft. Stratum IVc.
61. Short cylinder hexagonal.
No. 6398. AC III, KX/A3h, -46 ft. Stratum IIIc.
62. Long cylinder flattened hexagonal.
No. 8361. AC III, KIX/P9d, -51 ft. Stratum IVc.
63. Bicone hexagonal with irregular facets.
No. 6366. AC III, KIX/K1e, -45 ft. Stratum IIIb.
64. Long barrel circular.
No. 4193. AC III, KIX/K7b, -41 ft. Stratum I.
65. Spherical, with traces of green glaze.
No. 1237. AC III, KX/F6e, -40 ft. Stratum I.
66. Long barrel circular.
No. 1216. AC III, KX/F10k, -39 ft. Stratum I.
67. Bicone hexagonal.
No. 1157. AC III, KX/F5a, -39 ft. Stratum I.
68. Bicone hexagonal.
* No. 3843. Surface.
69. Standard barrel hexagonal.
No. 332. Surface.

7. BEADS OF YELLOW QUARTZ

Yellow quartz is the material for four beads from Ahichchhatrā. Two of them are from the lower levels in Stratum VIII and are dated 300-200 B.C. ; the other two, from sectors other than AC III, are not well-stratified. Two (one from AC III and another from AC V) are long barrel hexagonal with alternating large and small facets, while the other two are drop-pendants, prepared from the natural stones in their amygdoloid state, with perforations at the top. Except for their early date there is nothing remarkable about these beads.

Amygdoloid pendants of yellow quartz are very common, specimens being known from Patna, Masaon Dīh, Chirayyā Kot and Ghosi. A pendant almost similar to no. 71 was obtained in the first century A.D. levels in the Kauśāmbī excavation. Several yellow quartz beads also occur in the Mauryan strata at Tripurī.

Yellow quartz seems to have been a favourite material for beads. At Taxila beads of this material are dated between the third B.C. to the fifth century A.D. Some very fine specimens from Kauśāmbī are preserved in the Allahabad Municipal Museum and in the collection of Shri Jineshwar Das of Allahabad. Two exceptionally well-made beads of yellow quartz from Arikameḍu are in the writer's collection. The use of this stone was prescribed against jaundice, as recorded in Pliny's *Natural History*, xxxvii, 139.

Nos. 70 AND 71 (fig. 3 ; pl. XII)

70. Long barrel hexagonal with alternating large and small facets.
No. 3018. AC V, QVIII/O5j, -45 ft.
71. Faceted drop-pendant.
No. 915. AC IV, MIX/H1j, -43 ft.

8. A BEAD OF MILKY QUARTZ

A milky quartz bead is specially noteworthy. It has a rough barrel shape with groove-collars and is ellipsoid in section. Exactly similar beads have been found at Taxila¹ (two beads, first century A.D.), Kauśāmbī² (first century A.D.), Bhītā,³ Rājghāt, Tripurī,⁴ Kulaon on the Narmadā,⁵ Nāsik⁶ and Konḍāpur.⁷ All these beads bear a very high polish resembling glaze, which, on microscopic examination, seems to have been produced by grind-polishing.

No. 72 (fig. 3 ; pl. XII)

72. Roughly barrel with groove-collars, ellipsoid.
No. 11110. AC XV, RVII/Y₄h, -50 ft.

9. BEADS OF GARNET

Garnet is represented by a few beads collected as surface-finds, none being recorded in the excavation. Of special interest is a fragmentary tortoise-shaped amulet (not illustrated). The significance of this amulet has been pointed out by me elsewhere.⁸

10. BEADS OF AMETHYST

Only four amethyst beads are recorded, but their material is of a very fine quality. The oldest specimen, no. 73, is a long barrel bead, elliptical in section, one of its surfaces being nearly flat. It is considerably large in size, a peculiarity noticed amongst Mauryan beads, and is dated 300-200 B.C. Another one, no. 74, plano-convex in section, resembles a scaraboid and shows large perforations. It is from Stratum III, belonging to the Gupta period. Of the same age is an elliptical bead, no. 75, hexagonal in section, which has several parallels in north India. Śuṅga beads from Lauriyā Nandangarh⁹ are similarly shaped, as also the amethyst beads in the Piprāwāh vase. Examples are also known from Rājghāt, Kauśāmbī and Bulandībāgh (Patna Museum, no. Sq. 31 Ka3/159). Recently a few have been found at Tripurī and at Kulaon on the Narmadā. An extremely tiny flat barrel bead, no. 76, tabular in section, is unstratified.

Nos. 73-76 (fig. 3 ; pl. XII)

73. Long barrel elliptical.
No. 10854. AC III, KX/L₁c, -61 ft. Stratum VIII.

74. Elliptical plano-convex.
No. 8449. AC III, KIX/E8d, -43 ft. Stratum IIIa.

¹ Beck, *Beads from Taxila*, pl. V, 1.

² Beads from Kauśāmbī excavation.

³ Beads in the Lucknow Museum.

⁴ Found in 1952-excavation.

⁵ Author's collection (for this and subsequent references to Kulaon).

⁶ Found in 1951-excavation.

⁷ Dikshit, *Some Beads from Kondapur*, pl. II, 61.

⁸ Dikshit, 'Notes on Indian amulets', *Bulletin of the Prince of Wales Museum, Bombay*, no. 2 (Bombay, 1953), pp. 92-93.

⁹ Specimens in the Indian Museum, Calcutta.

75. Elliptical hexagonal.
No. 6369. AC III, KIX/K5a, -43 ft. Stratum IIIa.
76. Long barrel tabular.
Surface.

11. A BEAD OF AQUAMARINE

Aquamarine or beryl is represented by a single specimen, no. 77, which is not accurately dated but may be of Gupta date. It is an exceptionally well-made bead, perhaps the best one in the collection from Ahichchhatrā. It is flat cylinder with the corners rounded and hexagonal in section. At the short ends of the bead a vertical groove runs across the perforation. The perforation of this bead, which is about $\frac{7}{8}$ in. in length, seems to have been done in a single operation, the lapidary having taken advantage of the transparency of the material. It seems probable that the grooves at both the ends were intended to serve as a guide-mark for his drill. The minuteness of the drill and his ability to meet the bore in the same axis, in case it was doubly perforated, are very remarkable.

No. 77 (fig. 3 ; pl. XII)

77. Cylinder hexagonal with corners rounded. Vertical grooves at the short ends.
No. 9251. AC VII, GV/D7c, -41 ft.

12. BEADS OF GREEN JASPER

There are only three jasper beads in the collection, all of them from areas other than AC III and therefore not firmly dated. The shapes represented are twisted pentagonal (no. 78) and cornerless cube (no. 79), which are fairly common in jasper beads, and I have already referred (above, p. 40) to the prevalence of the former in the Śātavāhana period in the Deccan.

Nos. 78 AND 79 (fig. 3 ; pl. XII)

78. Faceted twisted pentagonal.
No. 732. AC I, Trench I, -63 $\frac{3}{4}$ ft.
79. Cornerless cube.
No. 3020. AC V, -43 ft.

13. BEADS OF MISCELLANEOUS MATERIALS

A few sundry beads, comparatively recent in date, are described below, with their materials and shapes.

Nos. 80-82 (fig. 4 ; pl. XIII A)

80. Shell : circular tabular.
No. 6809. AC III, unstratified.
81. Bone : long cylinder circular.
No. 3509. AC III, KX/A8k, -42 ft. Stratum I.
82. Seed : drop-shaped bead, horizontally perforated.
No. 9235. AC VII, HV/J9a, -36 ft.

The circular shell bead is of very little interest, being a very common shape. The bone bead has been prepared by enlarging the cavity in a tubular long bone. The natural seed bead has been identified as *Coix Lacryma Jobi*. Linn.¹ by Dr. R. D. Misra of the Botany Department, University of Saugor.

14. A PENDANT OF SERPENTINE

No. 83 is a very fine pendant, its material being serpentine. It is about $\frac{1}{2}$ in. in length and shows a pregnant woman in a squatting position with bent legs. Considering the hardness of the material this bead has been carved with great skill and minuteness of detail. The subject represented by this pendant is somewhat unusual and by the doctrine of 'similars' there is reason to believe that it was used as a charm against difficult labour.

I have not seen any analogous instance of the charm represented by the present specimen. Unfortunately this pendant is not very accurately dated, but the manner of depicting the figure closely imitates Śuṅga art and on stylistic grounds it may be of that period.

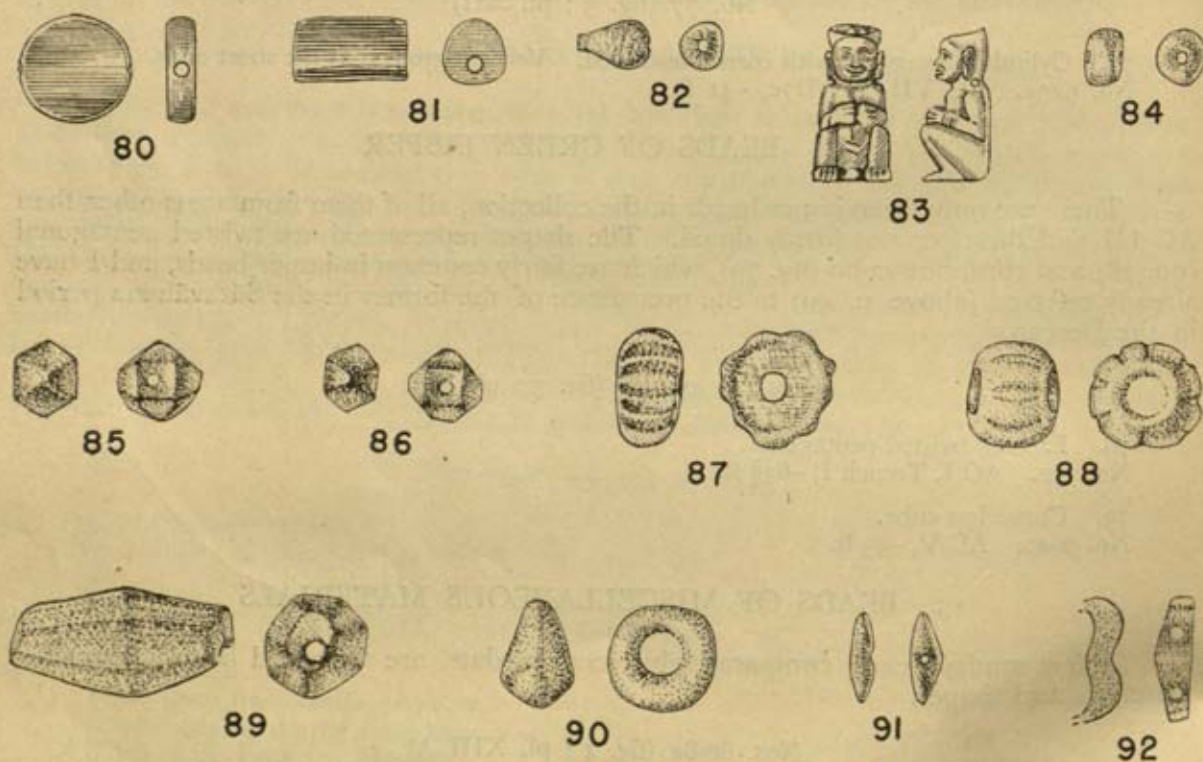


FIG. 4. 80, shell ; 81, bone ; 82, seed ; 83, serpentine ; 84-92, faience. $\frac{1}{4}$

¹ Cf. N. L. Bor, 'Common grasses of the United Provinces', *Indian Forest Records*, II, i (1940), pp. 99-100. This seed is largely used by the poor in U.P. on account of its hard and smooth shell. It is called *kavaḍeṇā* from its resemblance to the cowrie-shell ; and the plant grows wild in marshy places. Similar seed beads were found in the Kolhāpur excavations also, but the material was not identified.

No. 83 (fig. 4; pl. XIII A)

83. Pendant showing a pregnant woman in a squatting position with bent legs.
No. 6587. AC V, QVIII/P4j, -73½ ft.

15. BEADS OF FAÏENCE

Faïence is the material for seventeen beads from Ahichchhatrā. With the exception of four beads from areas other than AC III, all are clearly stratified and belong to Stratum III. Only two among the beads are white, the rest being coloured green. Some of the latter bear a very high glaze, but many of the larger specimens are very coarse-grained and have a pitted surface.

The shapes of these beads are usual, viz. spherical beads, 4; long barrel circular, 4; cornerless cube, 4; and *āmalaka*-shaped, 2. The less common forms are: double crescent, 1; truncated bicone, septagonal in section, 1; and flat diamond-shaped toggle, 1.

Amongst the four spherical or oblate beads, one, no. 84, bears an excellent high glaze and is fire-polished. Three (one, no. 85, illustrated) amongst the four cornerless cube beads show signs of high glazing and being fire-polished have their edges considerably worn out; the fourth specimen, no. 86, however, retains the edges and is a perfect specimen of moulding.

The most favourite shape amongst faïence beads, viz. the *āmalaka*, is represented only by two beads, nos. 87 and 88, but both are unstratified. One of them has a pitted surface owing to bad firing, while the other, having the gadroons effected by notches all over the body, retains much of its original green glaze.

Āmalaka-shaped faïence beads are found on several sites in India, both in the north and the south, and on account of their universal character it is hardly necessary to enumerate them. Their distribution in the Śātavāhana period in the Deccan is particularly noteworthy; and most of the beads from northern India that I have seen belong to about the same period.

Amongst the less frequent forms the following beads are noteworthy. No. 89 from Stratum III, is a rare and unusually large biconical bead with irregular septagonal faceted section. Its surface is pitted and shows a pottery-like core beneath. It was covered over with a green glaze but only traces now remain in the cavities.

Another rare form is represented by a wedge-shaped annular bead, no. 90, also from Stratum III, and is lightly glazed. This shape is very scarcely met with in faïence beads.

A lenticular, diamond-shaped toggle bead, no. 91, is not clearly stratified. It is of white hard faïence and is not well-perforated. A bead almost similar to this was examined by me amongst the beads from Konḍāpur, and two specimens from Kauśāmbī are preserved in the Allahabad Museum. But beads of this shape are scarcely met with.

The most interesting bead in this series is a large double-crescent spacing bead, no. 92, from an early level of Stratum III. It is of white faïence, covered with traces of a green glaze. It has the shape of the English numeral 3, with a flat underside and a projecting mid-rib on the other. Two holes occupy the central portion of the joined crescents.

Exactly identical faïence beads, dated about the first century A.D., are known from Taxila,¹ and similar ones, also of faïence, dated about the second century A.D., are also recorded from Charsadda.² Recently I saw an identical bead of this shape from Sāmbhar in the Jaipur Museum, but its date is not known.

¹ Beck, *Beads from Taxila*, pl. X, 5 and 6.

² *An. Rep. Arch. Surv. Ind.*, 1902-3 (Calcutta, 1904), pl. XXVIII b, 3.

The antiquity of this shape can be traced back to the Harappan times of India, since a similar bead of burnt steatite has been found at Harappā.¹ Outside India similar beads have been recovered from Jemdet Nasr.² Two of these are of glazed paste (faïence?) and the third one is of mother-of-pearl.

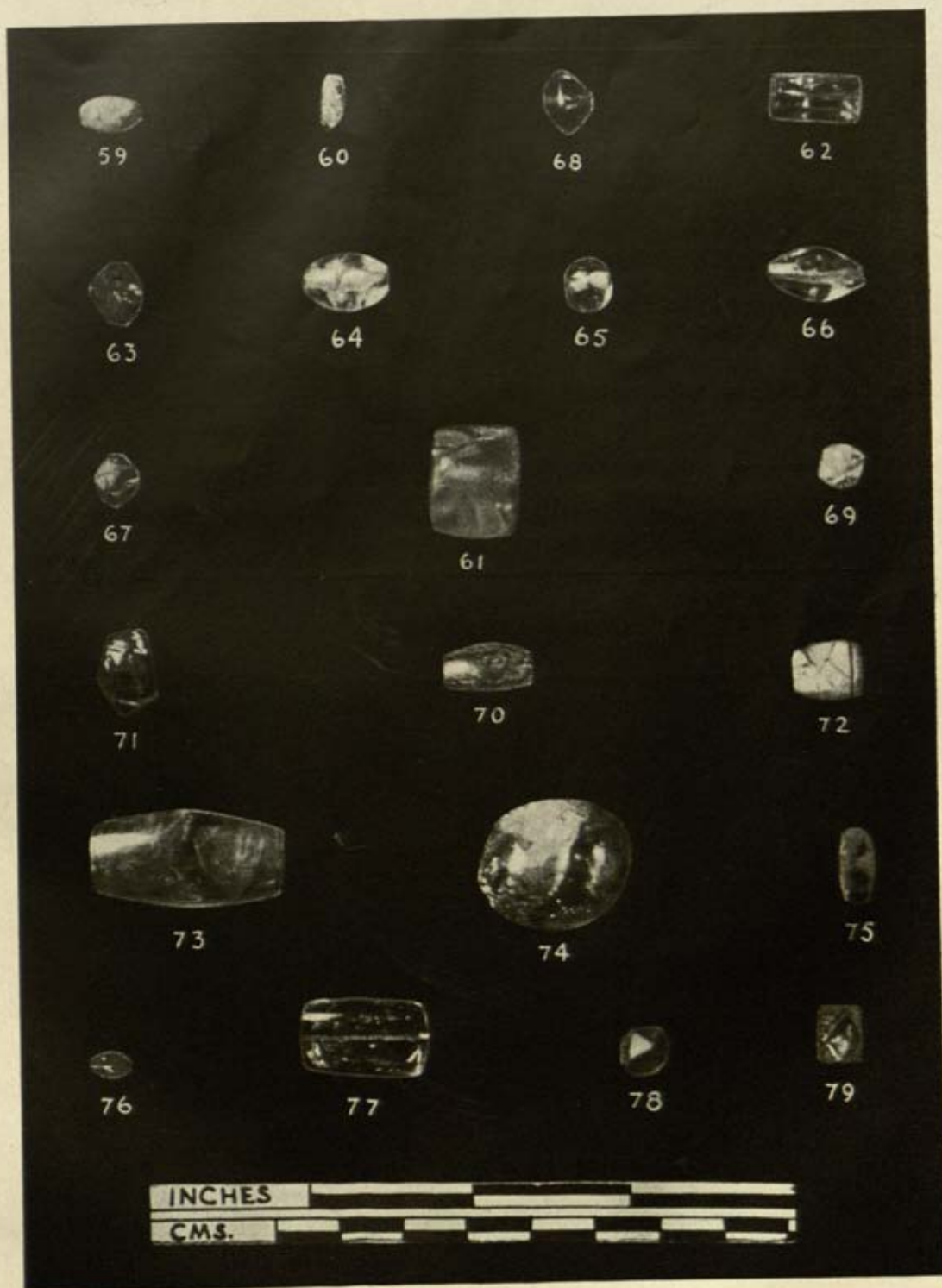
It is interesting to note that none of the faïence beads from Ahichchhatrā is dated prior to A.D. 350. This material, which was very extensively used for the manufacture of beads, bangles and other objects during the Harappan times, seems to have been unknown or at least very sparingly used during the Mauryan period. At Taxila only two beads are reported to have been found in Bhīr Mound. Among the beads found in the Allahabad University excavations at Kauśāmbī, there are no faïence beads which can be attributed to a period prior to 150 B.C. Similarly they are absent from the Mauryan strata at Tripurī and are not reported from the pre-Śātavāhana levels at Nāsik. Faïence beads gained a very wide popularity from about early centuries of the Christian era, as is evinced from the very large numbers recovered from Sirkap, from Charsadda and other sites in north India; in the Deccan these were a particular favourite during the Śātavāhana period. The material seems to have lost its appeal with the extensive use of glass, though its use in the Gupta times is evinced from the stratified specimens from Kauśāmbī and Ahichchhatrā. I have not seen any faïence bead which could reliably be dated to a period subsequent to the Gupta age, and even the specimens later than the second-third centuries A.D. are not large in number. With the known cultural relations of India with Persia during the Mauryan period, the absence of faïence, for the use of which Persia is so famous, is striking.

Nos. 84-92 (fig. 4; pl. XIII A)

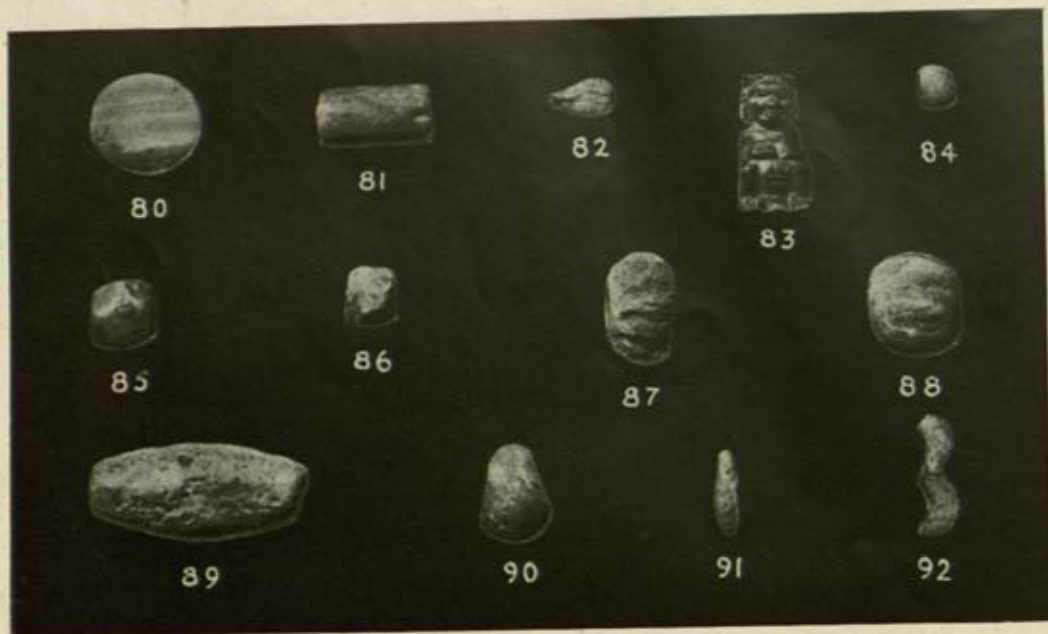
- 84. Oblate circular.
- No. 90. AC III, Trial Trench, -43 ft. 4 in.
- 85. Cornerless cube, glazed in green.
- No. 3911. AC III.
- 86. Cornerless cube, with traces of green glaze.
- No. 6451. AC III, KIX/K7f, -46 ft. Stratum IIIb.
- 87. *Āmalaka*-shaped, with traces of high green glaze.
- No. 9071. AC VII, GV/C6e, -39 ft.
- 88. *Āmalaka*-shaped, with traces of high green glaze.
- No. 10002. AC I, Room 3, -42 ft.
- 89. Long bicone septagonal.
- No. 8300. AC III, KIX/K7a, -46 ft. Stratum IIIb.
- 90. Wedge-shaped annular.
- No. 4109. AC III, KIX/K2e, -40 ft. Stratum I.
- 91. Lenticular diamond-shaped toggle.
- No. 3926. AC III.
- 92. Double-crescent plano-convex spacer.
- No. 3859. AC III, KX/F8c, -48 ft. Stratum IIIc.

¹ Vats, *op. cit.*, II, p. 441, pl. CXXXIX, 32.

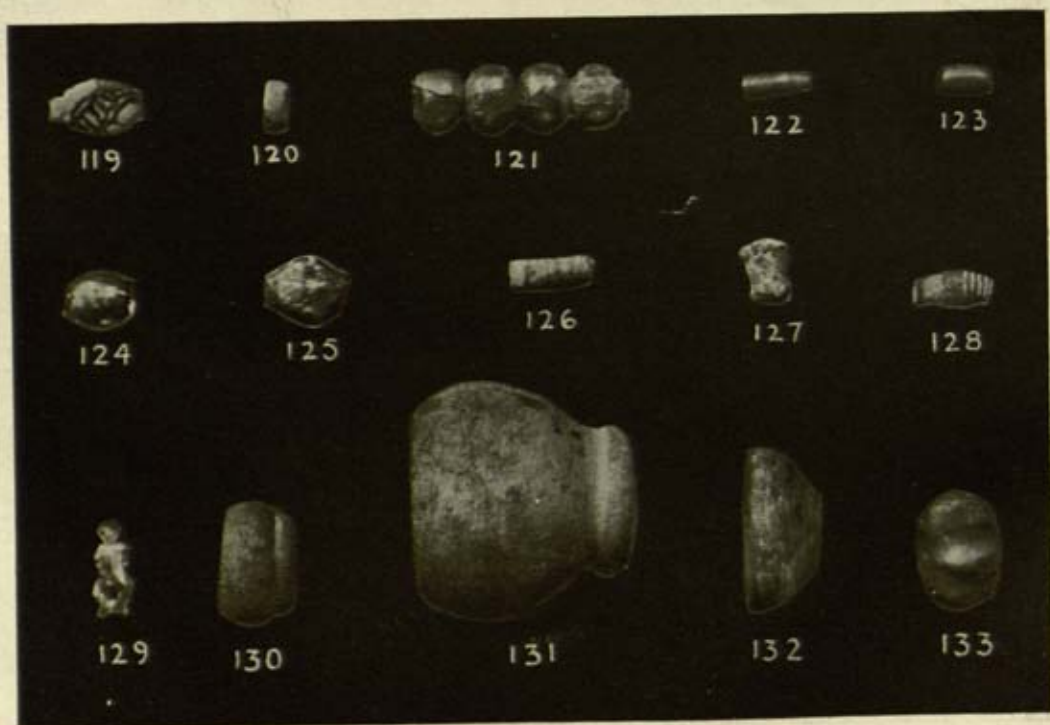
² E. Mackay in *Field Museum of Natural History, Anthropology, Memoir*, I, no. 3 (Chicago, 1931), pls. LXXIV, 6, LXXII, 27-29, and LXII.



59-69, crystal; 70 and 71, yellow quartz; 72, milky quartz; 73-76, amethyst; 77, aquamarine; 78 and 79, green jasper



A. 80, shell; 81, bone; 82, seed; 83, serpentine; 84-92, faience. $\frac{1}{2}$



B. 119, blue millifiori glass; 120, orange glass; 121, gold-foil glass; 122, dark-red opaque glass; 123, bright-red glass; 124 and 125, black glass; 126-129, copper; 130-133, terracotta. $\frac{1}{2}$

16. BEADS OF GLASS

More than one hundred glass beads were recovered from excavations, and besides there are several in the string of surface-collections sent to me. In the following classification I have taken into consideration only those from the stratified deposits and a few, of exceptional interest, from the surface-collection. The shape of these beads, the technique of their manufacture and their general distribution have naturally received primary attention; but I have taken very little aid of the chemist, whose judgment should remain final in the matter of a technical subject like glass. The similarities which I have pointed out are, therefore, on the basis of a large collection of glass beads I possess or have examined in different museums and from the notes I have made.

A. GREEN GLASS

Twentyeight beads of green glass were recorded in the excavations. These have different shades of green ranging from a bright leaf-green to a dull green and differ in the degree of opacity, twelve being transparent and the rest opaque. The colouring agent appears to be copper in most of the cases, but three or four seem to be coloured with iron. Various processes are used in the manufacture of these beads. While most of the beads are made by the wire-wound process, there are a few moulded beads. Occasionally these are made from canes and are folded. A thin film of salts is visible on several transparent beads and a simple immersion-test in pure water often proved to be useful for the identification of the original colour.

The beads are distributed in practically all strata; there is only one from Stratum VIII, while none is forthcoming from Stratum IV. This absence is no doubt adventitious.

Only a few beads are noteworthy for their shapes. Besides the common shapes, like spherical and oblate beads, there are a number of hexagonal forms (barrel, cylinder and flattened), cornerless cubes and circular lenticular. Some rare shapes (nos. 97 and 107) are a curved pendant and a double chamfered cylinder, square in section (Beck's Type IX.D.2, b.d.).

TRANSPARENT GLASS, NOS. 93-100 (fig. 5; pl. XIV)

93. Long cylinder hexagonal. Moulded. Transparent bluish green, full of bubbles, edges cut and fire-polished.

No. 1283. AC III, KX/F9a, -39 ft. Stratum I.

94. Long cylinder hexagonal. Folded, made by the double-strip method round a spoke. Cane glass, full of horizontally-pulled bubbles.

No. 3034. AC V, QVIII/O4h, -42½ ft.

95. Standard cylinder circular. Probably folded. Transparent green, crackled at various centres. Hole bored by a sharp instrument, leaving depression at the edges.

No. 9389. AC VII, GIV/E2f, -40 ft.

96. Standard barrel hexagonal. Moulded. Transparent bluish green, well-made.

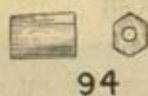
No. 1394. AC III, KX/F7h, -39 ft. Stratum I.

97. Curved pendant. Moulded and bent. Greenish transparent, coloured with copper. Well-made.

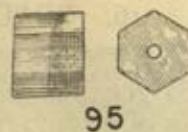
No. 899. AC IV, MIX/H3e, -36 ft.



93



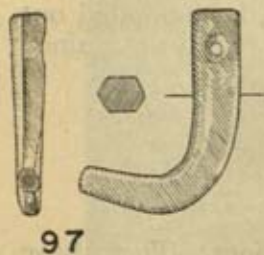
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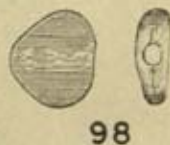
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100



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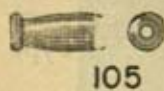
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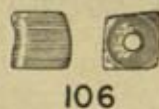
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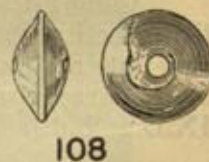
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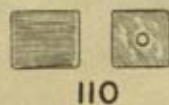
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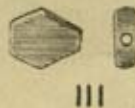
108



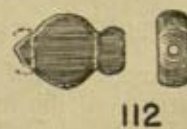
109



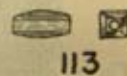
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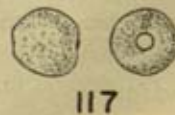
114



115



116



117



118

FIG. 5. 93-107, green glass ; 108-111, blue-green glass ; 112-118, blue glass. $\frac{1}{4}$

BEADS FROM AHICHCHHATRĀ, U.P.

98. Pear-shaped lenticular. Folded, Transparent green full of bubbles and coloured with iron. Hole bored by a sharp instrument leaving a depression at one end and a blurred edge, at the other, giving the bead a pear-shaped appearance.

No. 3087. AC V, -48 ft.

99. Bicone circular. Produced by the wire-wound process. Iridescent pale green, full of impurities.

No. 3183. AC V, QVIII/P4g, -65½ ft.

100. Cornerless cube. Iridescent bluish green, with surface-corrosion. Well-made.

No. 255. AC III, KX/B4j, -34 ft. Stratum I.

OPAQUE GLASS, NOS. 101-107 (fig. 5 ; pl. XIV)

101. Spherical. Produced by the wire-wound process. The only example of bright leaf-green glass at Ahichchhatrā, matched by several beads from the Bahmanī stratum at Kolhāpur and by many unstratified beads from Maski, Paṭhan and Chandravalli.

No. 4302. AC III, House III. Stratum I.

102. Elliptical circular. Leaf-green, the oldest specimen of this colour at Ahichchhatrā. Cracked surface, probably cane-glass.

No. 10835. AC III, KX/L1a, -60½ ft. Stratum VIII.

103. Standard cylinder circular, measuring $\frac{1}{32}$ in., thus being the tiniest of its class at Ahichchhatrā.

No. 3543. AC III, KX/F8d, -43 ft. Stratum III.

104. Elliptical tabular. Folded. Dull green, with impurities.

No. 8660. AC III, KX/L1a, -54 ft. Stratum V.

105. Long barrel circular lug-collared, one end broken. Cane-glass. Dull green.

No. 6405. AC III, KIX/K4c, -43 ft. Stratum I.

106. Cube. Folded, showing the fold near the perforation. Slightly corroded.

No. 3552. AC III, KX/A6g, -35 ft. Stratum I.

107. Cylinder square with double chamfered edge. Moulded, cracked at various centres. Pale green with yellow veins and impurities.

No. 1057. AC III, Room 128, -35 ft. Stratum I.

B. BLUE-GREEN GLASS

There are twelve beads of blue-green glass, which resembles the Persian blue shade. Only three amongst them are stratified and are attributed to Strata IVc and I. These are mostly of cane-glass wound on a spoke and in several cases flattened to form a lenticular shape when the glass was plastic. Only four beads in this series are illustrated.

Nos. 108-111 (fig. 5 ; pl. XIV)

108. Bicone circular. Produced by wire-wound process.
Surface.

109. Rectangular tabular. Produced by wire-wound process and flattened to shape.
Surface.

110. Rectangular square. Moulded.

No. 10204. AC IV, MIX/N7j, -42 ft.

111. Diamond-shaped tabular. Wound cane flattened to shape.

No. 9322. AC VII, GIV/E5c, -40 ft.

C. BLUE GLASS

Of the thirtythree blue glass beads a very large percentage is coloured with cobalt or copper, the former having a very deep shade of blue and the latter with a pale shade of blue. These are distributed in Strata IV to I. The glass is generally of a very good quality and the beads are moulded, there being only a few instances of cane-glass.

The shapes do not indicate much variety, the most popular shape being spherical and oblate beads. There are four short cylinder beads; only one example, no. 112, has a barrel shape with a lenticular section and lug-collars and belongs to Stratum IVa, being in conformity with a large number of similar specimens of comparable date in north and south India.

No. 112 (fig. 5; pl. XIV)

112. Barrel with lug-collars, lenticular.

No. 6987. AC III, KIX/P6a, -48 ft. Stratum IVa.

Another variety of blue glass, having a very bright turquoise shade, is represented by nine beads. None of these is dated earlier than A.D. 350. Besides the usual spherical and oblate shapes, the following are noteworthy.

Nos. 113-116 (fig. 5; pl. XIV)

113. Long barrel square. Shaped on a spoke.

No. 6971. AC III, KIX/E6f, -45 ft. Stratum IIIa.

114. Bicone circular. Same glass as above.

No. 1137. AC III, KX/A4j, -43 ft. Stratum III.

115. Bicone hexagonal with annular perforation. Same glass as above.

No. 3088. AC V, QVIII/O7j, -49 ft.

116. Diamond-shaped tabular. Folded.

No. 9227. AC VII, GV/D8e, -41 ft.

Besides these there are two very old specimens of blue glass, the colour of which cannot be matched on account their iridescent surface. Immersion in water renders them pale bluish and indicate that they are of cane-glass. These have the common spherical shapes and are valued only on account of their high antiquity.

Nos. 117 AND 118 (fig. 5; pl. XIV)

117. Spherical. Cane-glass. Pale blue, iridescent. Much corroded.

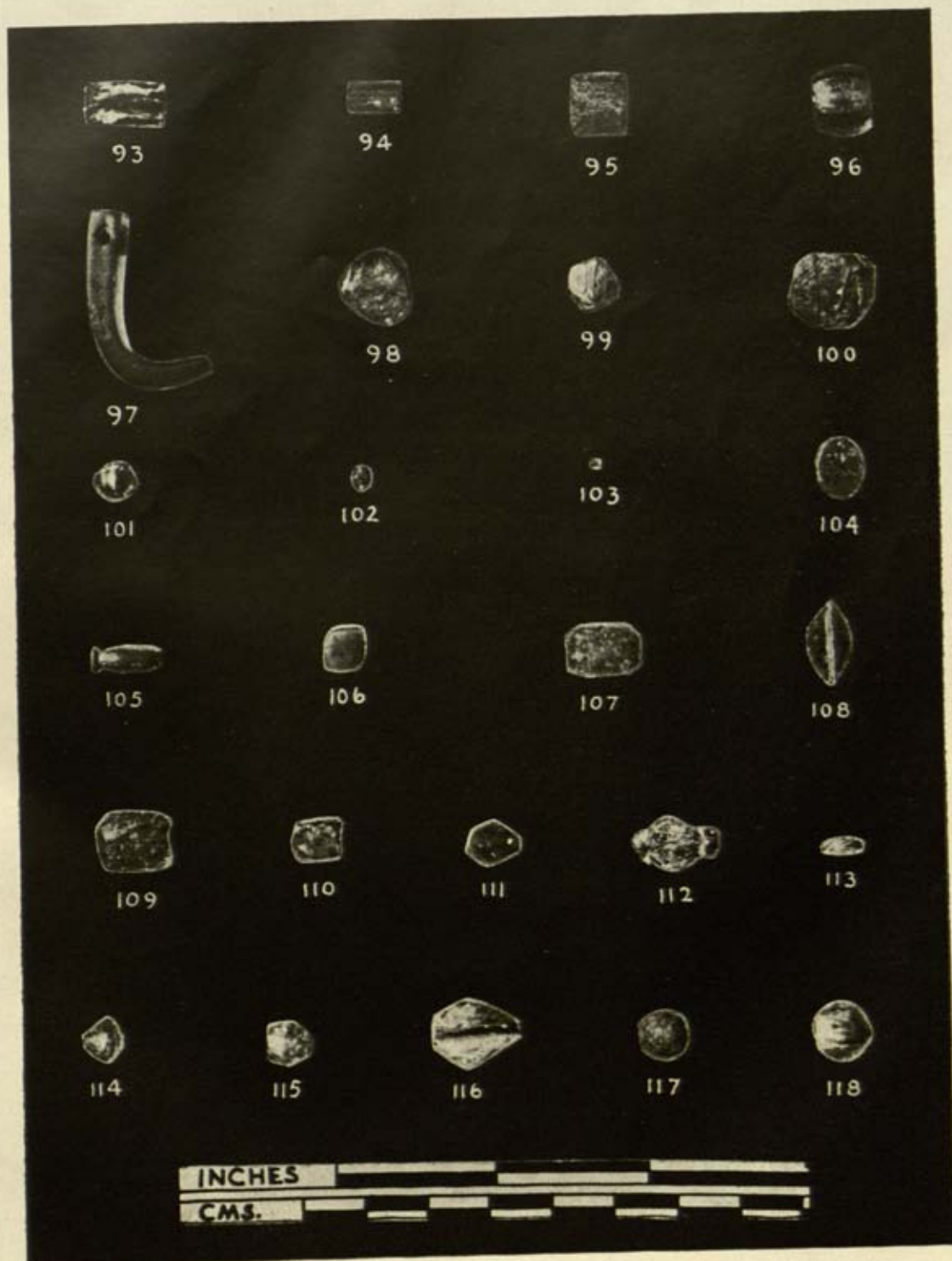
No. 8903. AC III, KX/L1b, -60 ft. Stratum VIII.

118. Spherical. Pale blue, highly iridescent.

No. 3178. AC V, QVIII/P4h, -63½ ft.

D. BLUE MILLIFIORI GLASS

Of special interest to the technician is a small barrel lenticular bead with lug-collars, having a millifiori pattern on it. It is a folded bead having a blue core, and the decoration consists of several vertical hatchings in red, white and black in a double-black border. The pattern is laid slantingly across the body of the bead. This mosaic bead is unfortunately not very clearly stratified, but similar beads appear to have had a wide



93-107, green glass; 108-111, blue-green glass; 112-118, blue glass

distribution in the Gangetic valley. Two identically decorated specimens are in the Lucknow Museum, said to have come from Bhīṭā. I have seen another specimen from Rājghāṭ, in the Bhārat Kalā Bhavan, Banaras, and a third one, from Madhuri, is in the author's collection.

No. 119 (fig. 6 ; pl. XIII B)

119. Long barrel lenticular with lug-collars. Folded, with blue core. Decoration consists of several vertical hatchings in different colours in a double-black border.

No. 993. AC IV, MIX/H6b, -40 ft.

E. ORANGE GLASS

Seven short barrel annular beads are of an orange-coloured glass and are distributed in Strata IV and III (A.D. 100-750). A microscopic examination shows that the orange colour is due to cuprous oxide held in small particles and the dull opaque appearance is due to devitrification of the glass. This glass is invariably opaque; and annular is the common shape in the majority of the beads from various sites I have examined. The earliest specimens of this glass are from Taxila (fourth century B.C.) ; at Kauśāmbī beads of this glass are dated 50 B.C. to A.D. 200. At Tripurī, annular beads occur in Stratum IV and are dated about A.D. 200. A few specimens from Ujjain are preserved in the Gwalior Museum but are not accurately dated. A string of two hundred and eighty beads of this glass collected from Birbhum by Mr. E. F. O. Murray is in my possession.

From the number of known specimens it appears that annular beads of this variety of orange glass were very popular in the early centuries of the Christian era.

No. 120 (fig. 6 ; pl. XIII B)

120. Tabular annular.

No. 6602. AC V, QVIII/Nga, -42 ft.

F. RED GLASS WITH WHITE CORE

Amongst the surface-collections of red glass beads, one specimen (not illustrated) is very interesting. It is a cylinder tube bead, having a white porcelainous matrix, over which a transparent red-coloured glass is coated. Beads of this variety of glass occur in the Śātavāhana stratum at Konḍāpur¹ ; and a solitary specimen associated with Roman potsherds was dug out from a tank in the Kanheri caves near Bombay. They are also known from Patna (Patna Museum no. Sbk. 35/670) in the Bulandibāgh excavations. This glass, probably Venetian in origin, is also seen amongst the imported beads in Ladakh.² They are also known from Rhodesia³ and Fayum in Egypt.

G. GOLD-FOIL GLASS

Eight beads are of gold-foil glass. This is a special type of glass beads in which a layer of gold foil is pressed on a glass matrix when hot and is laid over again with another

¹ Dikshit, *Some Beads from Kondapur*, pl. IV, 212.

² Cf. *Indian Antiquary*, XXXIV (1905), p. 209.

³ *Bulletin of the Baroda Museum*, III, pt. 1 (1945-46), p. 55 ; see also Beck's report on Rhodesian beads in Caton-Thompson, *Zimbabwe* (Oxford, 1931) and on the beads from Mapungubwe in Foucher, *Mapungubwe* (Cambridge, 1937), pp. 103-13.

coating of transparent glass. As the foil is not a good cementing material, the material does not form a homogeneous mass and the tendency of the beads is to break at the foil-layer. This accounts for the several fragmentary beads recovered from excavations.

A unique feature of the present collection is a row of four segmented beads, no. 121, which have not been separated for being made into individual beads. The matrix is made of long canes and, when overlaid with foil, appears to have been dipped into a batch of colourless glass. The flakes of this secondary layer of glass show signs of corrosion starting from numerous centres and have a crackled appearance.

Most of the beads are unusually large spherical or standard barrel in shape and have a collar-like effect at the edges where they are separated by notches made in the long cylindrical tubes out of which they are prepared.

Beads with gold foil have a very large distribution in India. In northern India they are known from Bhīṭā, Patna, Masaon Dīh, Kauśāmbī, Ujjain and Tripurī. At Bhīṭā they were recovered in the 1909-10 excavations but were not very accurately dated.¹ At Kauśāmbī seven specimens are dated 300 B.C. to the second century A.D. The Tripurī specimens occur in Stratum IV and are dated about A.D. 200. The rest of the specimens are from surface-collections and are therefore not datable.

In south India beads inlaid with gold foil are found in the Śātavāhana strata at Nāsik, Kolhāpur,² Konḍāpur,³ Chandravalli, Karāḍ⁴ and Arikameḍu.

The beads from Ahichchhatrā occur mostly in Stratum III (A.D. 350 to 750), and two small fragments are from Stratum I. From the four beads in segments referred to above it appears that they were manufactured locally.

No. 121 (fig. 6 ; pl. XIII B)

121. Four segmented circular beads. Matrix made of long canes.
No. 8065. AC IV, MIX/N2b, -44 ft.

H. RED GLASS

(i). *Dark-red opaque*

Five beads are of a dark-red opaque glass and are distributed in Strata VIII to II. With the exception of one bead, which is moulded, all are made from long canes and are fire-polished. They are the usual cylinder oblate beads and represent a common shape of copper-red glass very widely distributed throughout India. At Kauśāmbī this glass is known to be popular in the second century A.D., but one specimen is dated about 200 B.C. At Patna beads of identical glass occur in depths ranging from 7 to 21 ft. below surface at the Kumrāhār site (thirtysix beads in the Patna Museum) ; a very large collection of similar beads from Dhalbhum Pargana, District Singhbhum, is in the writer's collection. They are frequent also at Rājghāt, Masaon Dīh and Ghosi, and I have seen a few beads of this glass from Taxila in the Indian Museum, Calcutta. In the excavations at Tripurī they are quite common in the second century A.D. levels. The Gwalior Museum preserves some beads of identical glass from Ujjain. In the south such beads are known from Maski, Konḍāpur, Paiṭhaṇ, Nāsik, Chandravalli and Arikameḍu. At Kolhāpur they

¹ *An. Rep. Arch. Surv. Ind.*, 1910-11 (Calcutta, 1914), pp. 92-94.

² Sankalia and Dikshit, *op. cit.*, p. 144.

³ Dikshit, *Some Beads from Kondapur*, pl. IV, 206-09.

⁴ M. G. Dikshit, *Exploration at Karad* (Poona, 1949), pl. XIa, 5-6.

are associated with the Śātavāhana stratum, and the same date is provided by several specimens from the Arikamedu excavations.

The solitary bead from Stratum VIII is the only early example of this glass known to me, along with the other specimen known from Kauśāmbī (200 B.C.).

A microscopic examination reveals copper as the main colouring agent for these beads.

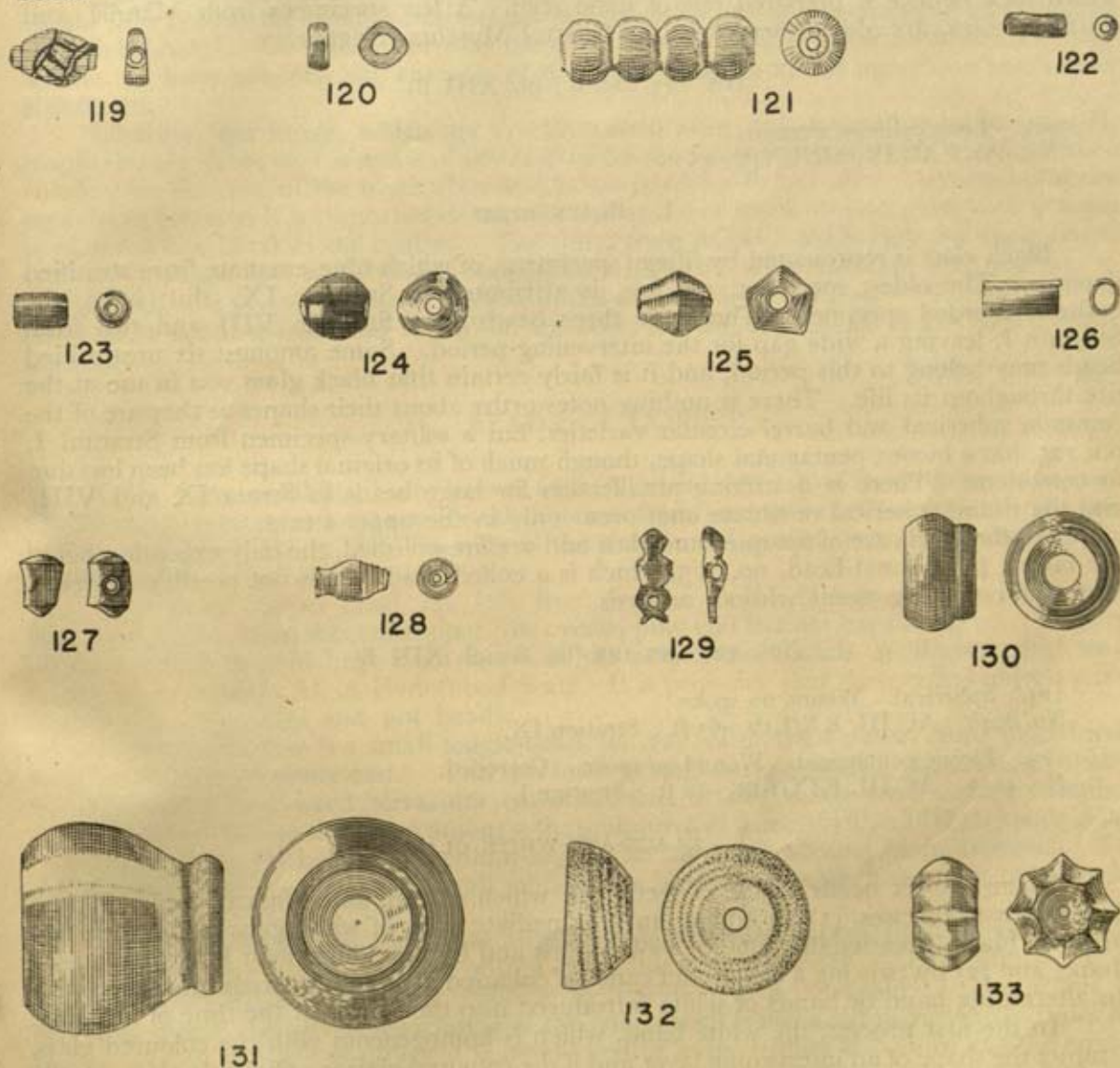


FIG. 6. 119, blue millifiori glass; 120, orange glass; 121, gold-foil glass; 122, dark-red opaque glass; 123, bright-red glass; 124 and 125, black glass; 126-129, copper; 130-133, terracotta. $\frac{1}{2}$

No. 122 (fig. 6; pl. XIII B)

122. Long cylinder circular.

No. 3733. AC III, KX/A7h, -43 ft. Stratum II.

(ii). *Bright red*

Besides the dark-red beads referred to above, the collection includes a large bright-coloured red bead. The bead, no. 123, not clearly dated, is opaque and its colour is almost similar to the *gunjā* berry-seed, which is very largely used by goldsmiths in India for weighing purposes. I have seen some aboriginal women wearing identical glass beads, which they believe is prepared out of some seed. A few specimens from Māṇḍlā and Bastar, Orissa, are also preserved in the Central Museum, Nagpur.

No. 123 (fig. 6 ; pl. XIII B)

123. Long cylinder circular.

No. 992. AC IV, MIX/N1f, -45 ft.

I. BLACK GLASS

Black glass is represented by fifteen specimens, of which nine emanate from stratified deposits. The oldest specimen, no. 124, is attributed to Stratum IX, thus being the earliest recorded specimen. There are three beads from Stratum VIII and two from Stratum I, leaving a wide gap for the intervening period. Some amongst six unstratified beads may belong to this period, and it is fairly certain that black glass was in use at the site throughout its life. There is nothing noteworthy about their shapes as they are of the common spherical and barrel circular varieties, but a solitary specimen from Stratum I, no. 125, has a bicone pentagonal shape, though much of its original shape has been lost due to corrosion. There is a striking predilection for large beads in Strata IX and VIII, and the tiniest spherical or oblate ones occur only in the upper strata.

All the beads are of opaque cane-glass and are fire-polished, the only exception being the bicone pentagonal bead, no. 125, which is a coiled bead. It is not possible to determine the colouring agent without analysis.

Nos. 124 AND 125 (fig. 6 ; pl. XIII B)

124. Spherical. Wound on spoke.

No. 8948. AC III, KX/L1b, -65 ft. Stratum IX.

125. Bicone pentagonal. Wound on spoke. Corroded.

No. 4253. AC III, KIX/K8e, -42 ft. Stratum I.

J. BLACK-AND-WHITE GLASS

There are six beads in the collection in which a composite glass is used. This is done by two processes, (1) by adding an intermediate layer of white glass in between two strips of black (occasionally blue or violet) glass and by moulding them into the requisite shape, and (2) by twisting a number of canes of coloured glass into the requisite shape with an alternating band or bands of white introduced into the spirals at the time of finishing.

In the first process, the white band, which is homogeneous with the coloured glass, assumes the shape of an intervening layer and if the coloured glass is sufficiently transparent, the layer can be seen as if in an oblique cut well below the latter. In the second process the canes of white glass appear in the core in the form of an encrustation or appliqué work. Due to different coefficients of expansion this glass is liable to flake off and leaves a small depression or groove on the core. Many old specimens generally do not retain it. In the first process the moulded beads are often marvered, which is wrought with some difficulties in the second process.

Beads made by both the processes occur at Ahichchhatrā. There are two beads produced by the first process in which a white band is layered in between a bluish glass. These millifiori beads have been described earlier in the section on blue glass (above, p. 56).

There are four glass beads of the second process, with layers of black and white glass : all are done by spirally-wound canes. Two beads from AC III belong to Strata I and II and the other two are unstratified, though apparently of the same age as the former. It would thus appear that the process was introduced quite late in the history of glass-making at Ahichchhatrā. Of the first process there are several early examples, particularly from Taxila. I have not seen any example of the second variety in the excavated beads from Kauśāmbī.

Of these four beads, which are not illustrated here, one, belonging to Stratum II, is spherical in shape and is made of spiral glass by the wound process, with a white thread running on the core of the black glass which has partially flaked off. The second specimen, from Stratum I, is truncated bicone circular and is of black wound glass with a zonal appliqué white band in the centre. The third, from AC IV, MIX/H1f, -38 ft., is barrel circular in shape and is of black wound glass with three white spirals. The last, AC V, QVIII/P5h, -64 ft., is also barrel circular and is of a black wound glass with three spirals in white glass running from end to end on the core, leaving depressions in the flaked white portion.

17. BEADS OF COPPER

Only a few metal beads are known from Ahichchhatrā, all of them being of copper. Of the seven specimens here considered, four are from unstratified deposits, while the rest belong to Strata VIII to III. In spite of the small number there is an interesting variety in the shapes.

The oldest copper bead, no. 126, from Stratum VIII, is a small cylindrical tube fashioned out of a thin sheet of copper ; its overlapping end has not been soldered. Exactly identical beads of gold have been found in the megalithic burials at Brahmagiri,¹ and in the cists at Maula Ali in Hyderabad State. It is probable that these coiled objects were intended for ear-plugs and not beads.

The next in date is a small toggle-bead, no. 127, of unusual shape, being cylindrical with conical tops at either end. This specimen belongs to Stratum V. In the excavations at Śiśupālgarh large-sized terracotta ear-ornaments of this shape were found. Similar ear-ornaments are also to be seen amongst the sculptures at Amarāvati and Nāgārjunakoṇḍa.

To Stratum III belongs a medium-sized spherical bead, about $\frac{1}{4}$ in. in diameter. To this class should be added two small oblate beads with annular holes, not accurately dated.

One of the beads, no. 128, from Stratum I, is small barrel bead shaped like a conch-shell. Half of the barrel is incised with a spiral line and in the other half a crossed line is drawn to indicate the columnar opening in imitation of a conch-shell. This shape is probably due to the sacred association of the conch-shell (*śaṅkha*) from very early times in India. As an auspicious object it is mentioned in early Indian literature like the epics² and was venerated alike by the Buddhists³ and the Jainas. The *śaṅkha* was worn by

¹ *Ancient India*, no. 4 (Delhi, 1947-48), pl. CXX B.

² *Mahābhārata*, Droṇa-parva, 82. 20; Varāhamihira's *Bṛihat-saṁhitā*, ed. H. Kern (Leyden, 1869), LXXX. 5, classes the conch-shell as one of the twenty-two gems.

³ Cf. *Mahāvamsa*, XI. 30-31, *Dīpavamsa*, XI. 32-33.

perforating the shell itself¹ or by carving imitations thereof. Examples of the former type are known from Harappan sites and even from Taxila.²

Beads imitating conch-shells are common in terracotta and glass. For example, several terracotta beads have been found in Kondāpur, and an analogous example is provided by a specimen from Bairant, preserved in the Bhārat Kalā Bhavan, Banaras. At Gayā Cunningham found two similar coral beads in the Mahābodhi temple.³ At Maski there is a large number of black glass beads of the same shape. The Allahabad Museum also preserves a dark-blue glass bead of this type, said to have been obtained from Kauśāmbī. A few terracotta specimens, findspot unknown, are also in the author's collection. But the shape is very rare in metal: a gold specimen,⁴ believed to be of Kushan or Gupta date, is known from Bhīṭā, while none of copper is known to me.

Of exceptional interest is a small unstratified copper bead, no. 129, shaped like a standing human figure, with its legs apart and feet joined together. The arms rest on the waist and the head is indicated by a small non-descript rounded projection above the neck. The lower extremities are shaped like a rhombus. A large perforation runs through the waist, probably for stringing with a series of similar beads. The figure exactly resembles some of the terracotta figurines from Ahichchhatrā, which are described as *vāmanaka* and attributed to Stratum IV.⁵ On account of the striking resemblance of the copper bead with the dwarf figurines noted above, I am inclined to believe that it is of the same age as the figurines.

The exact purpose of this bead is not known, but some cult-significance is not unlikely.

Nos. 126-129 (fig. 6 ; pl. XIII B)

126. Long cylinder circular, fashioned out of a tube.

No. 8955. AC III, KIX/P9b, -61 ft. Stratum VIII.

127. Toggle-bead, cylindrical with conical ends.

No. 8742. AC III, KIX/P9g, -52 ft. Stratum V.

128. Barrel, shaped like a conch-shell.

No. 4053. AC III, KIX/E2b, Room 128, Stratum I.

129. Bead shaped like a human figure.

No. 6587. AC V, QVIII/P4j, -73½ ft.

18. BEADS OF TERRACOTTA

Comparatively very few terracotta beads were unearthed at Ahichchhatrā. Besides some specimens occurring in different localities, the largest number was obtained in a room from Stratum III, assigned to the Gupta period. These beads, twenty-six in number, are grey in colour and were baked very hard under a high temperature. While most of them are without any slip, a few bear a highly burnished black slip. They are the most

¹ The earliest use of a perforated shell as an ornament goes as far back as the Aurignacian period in France ; cf. specimen illustrated by H. Beck, 'Classification and nomenclature of beads and pendants', *Archaeologia*, LXXVII (Oxford, 1928), fig. 25 A 4. Carnelian and other imitations are common in Egypt from the Vth Dynasty to Roman times. W. M. F. Petrie, *Amulets* (London, 1914), pp. 107-22.

² Beck, *Beads from Taxila*, pl. VIII, 41-42.

³ A. Cunningham, *Mahābodhi* (London, 1892), pl. XXII, 28.

⁴ *An. Rep. Arch. Surv. Ind.*, 1911-12 (Calcutta, 1915), pl. XXXII, 6.

⁵ Agrawala, *op. cit.*, p. 118.

common forms of the arecanut-shaped beads, known from several sites in India, and are therefore without any interest. The arecanut is also the shape of two other beads from unstratified areas. The most popular shape at Ahichchhatrā seems to be the spherical one, which is represented by as many as twelve beads. All of them are of a pale yellowish colour of medium or fine-grained grits and are without slip of any kind. Only one specimen is of grey colour, similar to the number of arecanut-shaped beads referred to above. These are distributed mostly in Strata V to III.

The special forms are listed below.

Nos. 130-133 (fig. 6 ; pl. XIII B)

130. *Ghaṭa*-shaped with a collar at one end, annular. Such beads simulate the shape of pots with constricted neck and occur in all levels of Kauśāmbī (500 B.C. to A.D. 200), but are more common in the 100 B.C.-A.D. 100 levels, and at Bhītā, Chirayyā Kot, Ujjain, Masaon Dīh, Taxila, Peshawar and Tripurī, at the last place in about A.D. 200 levels.

No. 3169. AC V, QVIII/Uga, -63 ft.

131. *Ghaṭa*-shaped, but with a more globular and less squat body and a rounded collar. Fine-grained yellow colour with a yellow slip on exterior.

No. 10752. AC XV, PVIII/E6a, -61 ft.

132. Plano-convex circular with wheel-striations. Coarse fabric with a yellowish slip. A rare shape.

No. 6607. AC V, QVIII/P4j, -73 ft. 6 in.

133. *Āmalaka*-shaped. Of dark brown colour, well-fired. The shape is common at Konḍāpur, Kauśāmbī, Bhītā, Chirayyā Kot, Rājghāt, Masaon Dīh, Āzamgarh, Paiṭhan, Arikamedu (author's collection) and Tripurī (A.D. 200 levels).

No. 8014. AC IV, MIX/Sgk, -42 ft.